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MONTHLY REPORT

OF

THE AGRICULTURAL DEPARTMENT.

SEPTEMBER, 1866.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1866.

MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,
September, 1866.

In the present issue of the monthly will be found a digest of very recent foreign official statements, concerning the cereals and cotton, of especial interest to American producers. The imports of breadstuffs into Great Britain during the present year show an insignificant contribution from this country, but the acknowledged deficiency of the harvests of the season, both in France and Great Britain, promises a demand which will call forth, at remunerating prices, our surplus stores, which fortunately are sufficient to aid materially in equalizing the heavy balance of trade against us. In this connexion the following communication, bearing date September 7, received through the courtesy of the Assistant Secretary of State, from the United States commercial agent, E. D. Webster, will be read with interest:

"For the information of the Commissioner of Agriculture and the grain-growers of the United States, I have the honor to state that the harvest in none of the midland counties, if, indeed, in any part of England, will come up to the expectations that were entertained a few weeks ago. It will fall very largely short, both in quantity and quality, of the grain. Unfortunately for the farmers, just as they were about ready to commence the wheat harvest, severe rains set in, which have continued, with very little interruption, down to this time, and the weather is still threatening. The consequence is, that in all parts of the country the grain has been very seriously damaged, and in some places whole fields have been rendered nearly worthless for human food. The crop of sound wheat in England, I am told by well-informed persons, will not be above one-half as much as that harvested last year. Very much of the wheat that will be harvested will be in the condition commonly described by our farmers, as 'grown.' Other kinds of grain have also suffered very severely. In France and other portions of Europe the crop of wheat is also reported small."

It will be seen that this country has already assumed its appropriate leading position in furnishing the cotton supply of European manufactories, the receipts of Great Britain in seven months of the present year being 1,017,856 bales of 400 pounds each, greatly in advance of those from India, and almost equal to the combined supply of all cotton-exporting countries except the United States A comparison of prices is suggestive of continued and assured supremacy of United States cotton in the markets of the world. The imports from the United States in the six months from January to June, inclusive, are computed at $126,349,855 for 904,704 bales, or 34½ cents per pound; while all other imports averaged but 27 cents, and India cotton but 22 cents.

An interesting feature in the present report is the assumption of statistical relations with the south. The returns may not be sufficiently numerous to afford entirely accurate bases for estimates, but it is believed that fair approximations have been made. They make estimates of farm stock, as compared with the numbers of 1860, as follows: horses, 68 per cent.; mules, 70; cattle, 65; sheep, 80; hogs, 56 per cent. A table of estimated numbers of farm stock of each of these States will be found interesting. It shows an actual increase in the *sheep* of Texas amounting to 20 per cent.

The county estimates of the probable cotton crop (on the first of September) were less confident, for many reasons, and especially owing to the dangers to which the crop is liable in the future. A fair analysis, however, at that date of the elementary estimates, will make up a grand estimate of about 1,800,000 bales.

The estimates of the various farm crops warrant the assertion that the year has been one of remarkable fruitfulness. The promise of my last report, as to wheat, is fully sustained. Of corn there will be more than a thousand millions of bushels. Although late, fears of killing frosts have been realized only to a small extent; yet recently deluging rains have overflowed large areas of ripening corn in the west, and retarded its maturing generally, arousing some apprehensions of inferior quality in that which is not fully matured. For particulars of the several crops reference is respectfully made to the body of the report.

ISAAC NEWTON, *Commissioner.*

THE BEST COTTON SECTIONS.—No. 3.

GEORGIA.

The following counties in this State lead in cotton production:

Counties.	Acres improved.	Bales of cotton.	Bushels of corn.
Houston	184,132	28,852	648,870
Stewart	145,982	25,902	509,399
Burke	250,814	23,419	703,842
Dougherty	91,427	19,580	356,812
Meriwether	162,619	18,159	552,670
Troup	146,245	17,978	520,091
Monroe	194,067	17,165	547,430
Talbot	132,933	15,366	501,505

Georgia stands fourth upon the list of cotton-producing States, next below Louisiana, which yielded in 1850 scarcely more than a third of the product of Georgia, which at that time "ranked" Mississippi and all other States except Alabama. These ten counties, small as the exhibit appears, compared with those of States further west, supplied nearly one-fourth of the total for the State, which includes one hundred and thirty-two counties. They lie in the western part of the State.

Of the twenty-six millions of acres of land in farms, but eight millions are improved, and the average price is $5 89. The farms are large, averaging 430 acres. In ten years preceding, nearly four millions of acres were taken into farms, almost half of it improved, and the number of farms advanced in still greater ratio, leaving the average acreage somewhat smaller than in 1850. The number of farms was, in 1850, 51,759; in 1860, 62,003. Number of slaveholders, 41,084; of slaves, 462,198; the average to each slaveholder 11 slaves. An examination of the returns of other farm products will show that cotton was less exclusively than in other States the object of farm industry.

TEXAS.

Texas comes next in order, with 431,463 bales. In 1850 the yield was 58,072 bales only. The plantations are of magnificent proportions, making an average of 591 acres, yet little more than half as large as in 1850. Less than ten per cent. is improved of the twenty-five millions of acres in farms; and the enormous quantity of one hundred and twenty-six millions of acres is yet unappropriated. The average price of farm lands is $3 47 per acre. Eight counties (of one hundred and fifty-one in the State) yield considerably more than one-fourth of the cotton, as follows:

Counties.	Acres improved.	Bales of cotton.	Bushels of corn.
San Augustine	22,972	31,342	144,246
Washington	76,328	23,221	541,139
Harrison	117,847	21,440	660,043
Walker	37,587	11,980	315,328
Rusk	100,037	11,791	653,563
Wharton	23,239	11,495	194,100
Polk	35,098	9,307	294,385
Matagorda	21,290	8,454	144,425

The productions of San Augustine are worthy of remark. Nearly a bale and a half per acre is averaged for the entire area, with 144,246 bushels of corn in addition, 5,122 bushels of wheat, 7,370 of oats, 5,666 of peas, 1,322 of Irish potatoes, 17,328 of sweet potatoes, besides a little tobacco, rice, rye, and other products. And yet this land (one-sixth improved) was taxed in 1860 on a valuation of less than four dollars! This county, on the authority of the last census, stands first among all the cotton-yielding counties of the States for quantity, in proportion to acreage, of improved land.

ARKANSAS.

Arkansas contains land unsurpassed for cotton culture, mainly on the Mississippi and Red rivers. The plantations are comparatively new, and a large part of the western and northern portions of the State produce as yet comparatively little. Of 55 counties, but 15 yielded more than ten thousand bales each in 1860. The following table gives ten of the principal of these counties:

Counties.	Acres improved.	Bales of cotton.	Bushels of corn.
Chicot	66,423	40,948	329,941
Jefferson	65,387	28,586	490,765
Phillips	83,737	26,993	578,137
Marion	19,436	21,063	292,158
Arkansas	45,493	20,178	364,632
Lafayette	47,390	17,653	310,430
Union	101,424	17,261	452,553
Hempstead	65,548	16,548	563,093
Columbia	87,446	13,911	456,360
Desha	42,264	12,261	239,923

These ten counties produced about two-thirds of the crop of the State, the total product of the State for 1860 being 367,393 bales.

TENNESSEE.

This State has hitherto made a small show in cotton production. The culture has been mainly confined to the Tennessee valley and the section between the Tennessee and the Mississippi. Its accessibility at the close of the war induced extraordinary efforts to extend the culture. There are 88 counties in the State, 25 of which reported no cotton whatever in 1860. These ten counties produced about four-fifths of the crop of the State:

Counties.	Acres improved.	Bales of cotton.	Bushels of corn.
Lawrence	40,862	68,441	339,990
Fayette	184,624	35,281	852,980
Haywood	138,026	26,537	822,871
Madison	160,401	24,187	941,645
Shelby	134,430	23,179	769,484
Hardeman	111,888	19,237	636,621
Rutherford	184,468	12,229	1,561,185
Tipton	65,570	11,717	485,478
Giles	190,238	11,602	1,129,129

Six of these counties lie together east of Memphis and north of Mississippi, and two of the others are in the valley of the Tennessee. Lawrence and Fayette alone yielded more than a third of the crop of 1860. Yet there is opportunity for a considerable extension of cotton culture in Tennessee.

CONCLUSIONS.

A map of these cotton-producing States, with the area of each county actually used in a given year in cotton culture, indicated by a separate color, would astonish planters themselves, and others could scarcely believe that a few counties in each State produced the bulk of its cotton crop, and that a small portion only of the surface of those counties is whitened by the snowy product. The best cotton soils are therefore easily found, and may be indicated as follows, with reference to their fertility and present actual prominence in production:

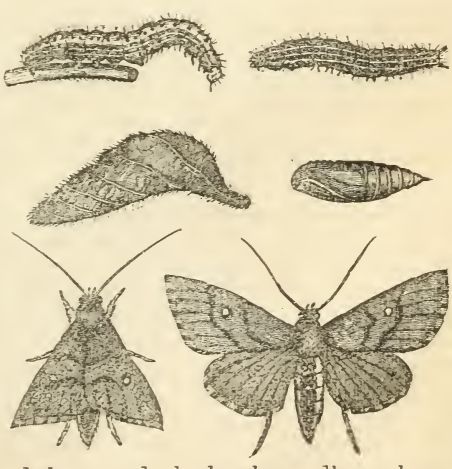
1. The Mississippi bottoms, in Mississippi, Arkansas, and Louisiana.
2. The alluvial soils of the Red river.
3. The rotten limestone soils of Warren, Hinds, and Madison counties, in Mississippi.
4. The canebrake lands and river bottoms of central Alabama.
5. The bottom lands of Texas.

INSECTS INJURIOUS TO COTTON PLANTS.—NO. 3.

COTTON CATERPILLAR, OR COTTON ARMY-WORM.

Noctua (anomis) xylina.—(SAY.)

The leaves of the cotton plant are sometimes entirely devoured by what is commonly known to the cotton planters as the "cotton caterpillar" or "cotton army-worm." In Florida this insect does not appear every year in such immense numbers as to destroy the crops, but only at uncertain intervals. In 1855 the caterpillars made their first appearance in the vicinity of Tallahassee, about the month of August, on the plantation of Mr. Hunter, and then spread gradually through the rest of the plantations in that region; and in October had already committed considerable damage in several cotton fields, not so severe, however, as had been anticipated.



The perfect insect, or fly, when at rest, is of a triangular shape, the head forming one, and the extremities of the wings the other two angles. The color of the upper wings is reddish-gray, a dark spot with a whitish centre appearing in the middle of each. The under wings are of a dark reddish-gray. The moth of this caterpillar loses much of its grayish cast when it becomes older, and the down has been rubbed from the wings. It then assumes more of a reddish tinge.

The perfect flies, or moths, are easily attracted by lights, and may be found resting in the daytime on the walls or ceilings of rooms, attracted there, no doubt, by the candles or lamps on the evening before. If undisturbed they will remain motionless during the day, but as night approaches they fly off with much vigor and strength. When in the open air they may be found among and under the leaves of the cotton

plant, as well as those of the weeds which surround the plantation. The eggs are deposited principally on the under sides of the leaves, but often upon the outer calyx; and I have even found them, when very numerous, upon the stem itself.

Wherever these caterpillars were very abundant, I counted from ten to fifteen eggs on a single leaf; they are very small, and difficult to be distinguished from the leaves themselves, on account of their green color. In shape the eggs are round and flat, and, when examined under a microscope, they appear regularly furrowed or ribbed. Their color, when freshly deposited, is of a beautiful semi-transparent sea-green. They are closely attached to the leaf on which they are laid. I am thus particular to state this, because, in an able article published some time ago, it was alleged that "the egg is fixed upon the leaf by a small filament attached by a glutinous substance." This mistake might the more easily be made by any person who had not himself observed the eggs when hatching, as that of the lace-wing fly is held by such a filament, and, moreover, is found in similar situations on the leaves, but generally with or near a colony of plant-lice, where the instinct of the parent lace-wing fly teaches it to deposit its eggs, and thus provide for a supply of fresh food for the young larvæ, which feed upon and destroy millions of the cotton-lice. There is a great difference also between the eggs of the caterpillar moth and those of the boll-worm moth, the first being, as before stated, round and flattened in shape, and green in color, whereas those of the boll-worm moth are not flat, but more of an ovoid shape, and of a dirty-yellowish tinge. I cannot state exactly what time is required to hatch the eggs after they have been laid by the parent fly, as I could not succeed in procuring any from the moths hatched and kept in confinement, although carefully preserved for the purpose. Dr. Capers says that it requires from fourteen to twenty days; but the eggs I found in the fields invariably hatched within a week from the time they were brought into the house. However, this must depend a great deal upon the state of the atmosphere and the warmth of the season. The young caterpillars, when hatched, very soon commence feeding upon the parenchyma, or soft, fleshy part of the leaves, and continue to do so until they become sufficiently large and strong enough to eat the leaf itself. They are able to suspend themselves by a silken thread when shaken from the plant. They change their skins several times before attaining their full growth, when they measure from one and a half to nearly two inches in length. The first brood of caterpillars, in August and September, were all of a green color, with narrow, longitudinal, light stripes along each side of their bodies, and two broader, light-yellowish stripes along each side of their backs, down the centre of each of which was one distinct, narrow, light-colored line. Each of the broader bands was marked with two black spots on each segment; and on each segment of the sides were three or more dark dots. The head was yellowish-green, spotted with black. The caterpillars of the second and third generations are of a much darker color than those of the first; their under parts are more of a yellowish-green, and their sides sometimes of a purple cast; their backs are black, with three distinct light-colored lines running down their length; and their heads are also darker, and of a yellowish-brown, spotted with black.

The question naturally arises, What causes this change of color in the latter part of the season, since the moths hatched from the lightest and darkest caterpillars prove to be exactly the same? Several planters attribute it to the influence of the sun, or to the food upon which they subsist; but this can scarcely be the case, as I have often observed individual caterpillars, evidently of the second or third generation, of the lightest green color, among a crowd of the black worms on the same leaf, as late as October, and exposed to the same influences of the sun.

These insects appear to multiply to the greatest extent in damp, cloudy

weather. When the older caterpillars are suddenly touched, they have the habit of doubling themselves up and springing to a distance of several times their length, but when undisturbed, and not feeding, they appear to rest on the leaf with the fore part of the body elevated and somewhat curved, sometimes keeping up a species of swinging or jerking motion from side to side, as if enjoying the heat of the sun.

This caterpillar is furnished with six pectoral, eight ventral, and two anal feet, of which, however, the two anterior ventral ones are imperfect, small, and apparently useless, so that its mode of progression somewhat resembles that of the span-worm, or looper, of the north.

In fifteen or twenty days after the caterpillar has attained its full size, it ceases to feed. It then doubles down the edge of a leaf, and fastens it with its own silk to the main part of the same leaf, or by webbing several leaves together, forming thereby a very loosely-spun cocoon. In this it transforms into a chrysalis, which at first is green, but in a short time after changes to a chestnut-brown, or even to almost black.

The first brood I raised were fifteen days in the chrysalis state before making their appearance as perfect moths; but, as this happened in a cold room and screened from the sun, I am of the opinion that, when they are exposed to a warm sun, in the open fields, the time must necessarily be much shorter. I raised one caterpillar late in the fall, which was even thirty days before emerging from its cocoon; but this I attributed entirely to the cold weather, and non-exposure to the sun. This fact would tend to show that the hatching of the chrysalis may be delayed, by peculiar circumstances, until long after the natural time.

The tail of the chrysalis is furnished with several small hooks, bent inward, by means of which it is enabled to hold fast to the loose web of which the cocoon is formed while emerging from the chrysalis skin, or, in case of accident, to prevent it from falling out of the cocoon during the prevalence of strong winds.

There have been many speculations regarding the origin and periodical visits of this moth. In 1843, Mr. Whitemarsh B. Seabrook read a "Memoir on the Cotton Plant" before the State Agricultural Society in South Carolina, in which he says:

"That the cotton-moth survives the winter is nearly certain. An examination of the neighboring woods, especially after a mild winter, has been often successfully made for that purpose. They were seen by the writer in May last, in the edge of a belt of pines, within a few yards of a cotton-field. In the winter of 1825, Benjamin Reynolds, of St. John's, Colleton, found them in the woods, principally on the cedar-bush, encased alive in their cover, impervious to water, and secured to a twig by a thread. The pupæ, wrapped in cotton leaves, from their bleak exposure, invariably die on the approach of cold weather."

From what was stated to me by some of the best planters in Florida, it would seem that this caterpillar appears on their plantations more or less, almost if not every year, and sometimes in a most unaccountable manner. Mr. E. Richards, of Cedar Keys, furnishes a statement which would seem to prove that it is migratory in its habits, as there is no other method of accounting for its sudden presence, except that, having previously existed on some other plant or weed, it had left it for food more congenial to its taste, although it has been asserted that the real caterpillar will eat nothing but cotton. He says:

"The last of July, 1845, these caterpillars made their appearance in a small field of three or four acres of sea-island cotton, planted on Way Key as an experiment to see if cotton could be advantageously cultivated on the Keys, no other cotton having been previously planted within eighty miles of them; but the whole crop was devoured. The caterpillar was at the same time destroying the cotton in the interior of the country."

In a statement made by Mr. William Munroe, of Gadsden county, Florida, to the Agricultural Department, he appears to think sea-island cotton not so liable to be attacked as the short-staple, when the two varieties are planted together. In his letter he says:

"I observed, when I had two fields of cotton adjoining, the one short-staple and the other sea-island, and the cotton caterpillars made their appearance, that they always destroyed the short-staple cotton first. Four years ago my crop was destroyed by the worm, and at that time they ate every green leaf on the short-staple cotton before they attacked the sea-island. This year (1855) my short-staple crop was destroyed by the worm on the Apalachicola river, and I observed that after the short-staple crop was all eaten, several sea-island stalks in the field, at a little distance, seemed to be uninjured; but, upon close examination, it was found that the worm had just commenced upon them. My impression, from the above observation is, that if we in this country were to confine ourselves to the production of sea-island cotton, the attack of the caterpillar would be much less frequent, or would probably altogether cease."

In regard to the periodical visitations of these caterpillars, Dr. Capers remarks that their first appearance as destroyers of cotton was in the year 1800, and that in 1804 the crops were almost destroyed by them. A snow-storm occurred, however, and swept them away; but they were found the succeeding seasons, though in smaller numbers. In 1825 they were spreading, but perished again by a storm. In 1826 they destroyed the crops. The first notice of them in this year was on the first of August, at St. Helena. Soon after, they were found on all the seacoast, from New Orleans to North Carolina. On the 23d of the same month they had destroyed almost all the cotton leaves, but suddenly left the plant, though not for the purpose of webbing, as many of them were young. The cause of their sudden disappearance is stated to have been that they were too much exposed to the powerful effects of the sun, in consequence of the plants being nearly destitute of foliage and not protecting them from its direct rays.

Colonel Benjamin F. Whitner, of Tallahassee, has also written an interesting article on the depredations of this caterpillar in that vicinity. "In 1835," he says, "the crops were entirely exempt from the ravages of the caterpillar. In 1836 it appeared by the first of October, but did no harm. In 1837 no mention is made of it. These notes were made in Madison county, Florida."

Colonel Whitner then moved to Leon county, in the same State, where, in 1838, the caterpillar appeared early in August. The second brood stripped the plants by the 20th of September, and were so numerous that, after devouring the entire foliage, they barked the limbs and stalks, and ate out bolls nearly grown. In 1839 they were less numerous, and appeared late. In 1840 they came out from the 15th to the 20th of July, and by the 6th of September the plants were stripped of their leaves and young bolls, so that the entire crop was less than half of the average of other years. In 1841 this caterpillar was seen in Madison county from the 15th to the 20th of August, and in Leon county between the 20th of August and the 1st of September. The loss was serious, comprising probably one fifth of the crop. In 1842 no damage was done. In 1843 they appeared near Tallahassee on the 1st of August, and plantations were stripped by the 15th of September. The crop was cut off from one-third to two-fifths by the caterpillar and storm. In 1844 the cotton worm was found webbed up on the 13th of July, and by the 15th of September some plantations were entirely denuded; yet in other parts of the county the ravages were only partial. In 1845 there was no appearance of the caterpillar. In 1846 it was found webbed up by the 7th of July. The second brood began to web up on the 26th of that month, and by the 20th the parts of the field in which the worm was first seen were found to be eaten out, and the fly, the worms, large and small, and the chrysalides, were discovered at the same time, a state of things never observed before. By the 5th of September, the damage amounted to a loss of more than one-half of the crop. In 1847, although the fly was seen on the 16th of July, no injury was done to the crop. In 1848 it was but slightly injured; but the year 1849 was particularly marked by the ravages of the caterpillar, as well as that of 1852.

Colonel Whitner further observes that these worms appear in successive broods, and accomplish the cycle of their transformations in from twenty-six to

thirty days, which has also been corroborated by others. A caterpillar hatched from the egg, under my own inspection, however, passed twenty days before webbing up; but as it had been kept in confinement in a cold room, most probably the growth was not so rapid as it would have been in the open air and exposed to the warmth of the sun. The skin was shed five times during the period of its growth, and on the twentieth day the caterpillar began its web.

In a very interesting communication from Mr. E. N. Fuller, of Edisto island, South Carolina, he describes the depredations of the caterpillar in his neighborhood as follows:

"In 1840 I discovered their ravages, confined to the luxuriant portions of the fields, near the sea-coast of this island. The larvæ were destroyed in the latter part of September. In 1843 they were first heard of by the 1st of September, when their ravages, limited as in 1840, were quite perceptible at some distance. A frost on the 18th of that month probably destroyed them. In 1846 they appeared on the 20th of July, and by the 10th of September I suppose there was scarcely a cotton leaf or any tender portion of the plants remaining, and the worms not fully grown deserted the ravaged fields in millions in search of food, failing to find which they died from starvation. The crop of this island was about 40 per cent. of an average one. In 1849 the caterpillars made their first appearance on the 22d of August; their ravages this year, being confined to the low spots, caused no injury of moment. In 1852 they were found on the 10th of August about forty miles to the southward, and on this island about the 20th of the same month. They disappeared here, however, without doing injury.

"Thus they have appeared at regular intervals of three years. In 1855, when they were again looked for, an intense drought from the early part of July was sufficient to prevent their increase had they made their appearance. The old planters say that in 1804 and in 1825 they appeared as in 1846; that is, in periods of twenty-one years.

"As near as I can judge, not having made any record, the length of time from the hatching of the egg to the chrysalis is twelve days; remaining four days in the chrysalis state, and six days more to the hatching of the egg. This seems to be the case in a season of moisture and heat, without which their progress would probably be more slow."

Among the many remedies recommended for this fly, or moth, fires and lights in the fields have been highly spoken of as attracting and destroying them. But even this may have its disadvantages, as Colonel Whitner, who has tried it, states that "it attracts the flies from other plantations, although multitudes of moths perished in the flames." An article likewise appeared in some of the southern papers, not long since, recommending white cotton flags about a yard square to be placed in the field, by which the moths are attracted, and upon which they deposit their eggs.

It is very doubtful, however, whether this plan will prove of any practical utility, as it is not probable that the natural instinct of the moths would lead them to select these flags as proper places to deposit their eggs, in preference to the green leaves of the cotton plant, which forms the food of the young worms.

Plates similar to those recommended for the boll-worm have also been used with partial success. But to destroy this pest it will be necessary to ascertain exactly the date of the appearance of the first moths, and then to exterminate them in the best manner, and as quickly as possible. Or, as, when the caterpillars make their first appearance, a few plants, merely, on certain spots are infested by them, it would be well to cut down and destroy both plants and worms in such portions of the field before the insects complete their transformations and the moths are ready to deposit their eggs throughout the whole neighborhood. Could not some favorite aliment be found on which the moth prefers to feed, as in the case of the tobacco-fly, and then poison them with some effective agent? This would at once rid the fields of the first broods of moths, the progeny of which, in the second and third generations, might devastate half the fertile plantations of the south.

ANALYSIS OF SORGHUM.

DEPARTMENT OF AGRICULTURE,
Washington, D. C., September 27, 1866.

DEAR SIR: I herewith submit to you the analyses of two new varieties of Chinese sugar-cane, Nos. III and IV.

One hundred parts of No. III contain:

Uncrystallizable sugar	4.38
Cane sugar	7.86
Sum total of the *two* sugars	12.24
Specific gravity of the juice	1.083

One hundred parts of No. IV yielded:

Uncrystallizable sugar	3.60
Cane sugar	5.94
Sum total of the *two* sugars	9.54
Specific gravity of the juice	1.075

Both kinds of sorghum yield a fair amount of molasses of good flavor. The juice mixed with beer yeast ferments, of course, like all sugary liquids, and the wine fermented yields upon distillation alcohol—100 pounds of cane sugar (C_{12}, H_{11}, O_{11}) yielding 51.12 pounds of absolute alcohol; 100 pounds of grape sugar (C_{12}, H_{12}, O_{12}) producing 46.46 pounds of absolute alcohol.

An important matter to the farmer, under the existing internal revenue laws, is the sale of sorghum molasses to the vinegar manufacturer, who, instead of employing high taxed spirits may use fermented molasses. One barrel of thick molasses, diluted with water until the saccharometer indicates ten per cent. of sugar, will probably yield six barrels of sugary liquid, which, after complete fermentation with beer yeast, (75° to 90° Fahr.,) may be poured at once upon the vinegar generators, or be first distilled and the alcohol thus obtained, after proper dilution, employed for the same purpose. With a complete fermentation two pounds of sugar yield one pound of alcohol. Every pound of alcohol produces a little less than one and one-third pound of radical vinegar—that is, hydrated acetic acid, ($C_4 H_3 O_3 + HO$.) Hence a 10 per cent. solution of sugar will give (by weight) a 5 per cent. alcohol, which will yield a vinegar containing a little less than 7 per cent. (by weight) of *hydrated acetic acid*, fully strong enough for household purposes.

I am, very respectfully, your obedient servant,

HENRY ERNI,
Chemist, Department of Agriculture.

HON. ISAAC NEWTON,
Commissioner of Agriculture.

ANALYSIS OF GRAPES.

BY THE CHEMIST OF THE DEPARTMENT.

Designation of the grape.	Approximate percentage of juice in the grape.	Specific gravity of the juice.	Percentage of ash in the juice.	Percentage of dry grape sugar in the juice, by Fehling's test.	Percentage of dry grape sugar by the optical test, (Mitscherlech.)	Percentage of acid above neutrality in the juice, calculated as dry tartaric acid.
"Blue Alvey," variety of Vitis cordifolia, from Mr. S. W. Sharp, Newville, Cumberland county, Pa.	82.28 (Berries alone pressed.)	1.055	0.61	13.46 (Means of two determinations.)	14.68 (Means of six determinations.)	1.51 (Means of three determinations.)
"Blue Concord," from Dr. John B. Keasby, Azadia Vineyard, near Washington, D. C., variety of Vitis labrusca.	60. (Grapes entire pressed.)	1.065	0.54	15.15	17.65 (Oechsle's must scale.)	0.85
"Cigar box," variety of Vitis cordifolia, from Dr. John B. Keasby, Washington. D. C.	(Not determined, grape juice sent.)	1.075	(Not determined.)	18.65	18.30 (Oechsle's must scale.)	1.13
"Norton's Virginia Seedling," variety of Vitis cordifolia, from Dr. John B. Keasby, Washington. D. C.	.....do.....	1.080	.....do.....	18.07	.....	1.30

NEW PROCESS FOR DISSOLVING BONES USED AS FERTILIZERS.

The importance of phosphates, such as common bones, as fertilizers, especially in grain-culture, could hardly be extolled, and it would be presuming upon the intelligence of our farmers to say more than to recommend its practical application. There exist, however, some obstacles which yet prevent waste bones, nearly always cheap and within easy reach, from being generally used. The great distances in the far west, and other inconveniences, render their purchase in powder-form expensive, and for grinding them at home, or dissolving them in acid, there is still less chance.

Professor Ilienhof, in Russia, has, however, lately discovered a method for dissolving them, which must prove highly economical and suitable in unsettled countries, where, owing to the great abundance of forests, wood-ashes are cheaply secured, indeed are almost always ready at hand. This new process of treating bones consists of mixing them with wood-ashes and slaked caustic lime, and keeping the mixture constantly moist. As in the preparation of lye for manufacturing soap, the alkaline carbonates in the ashes, such as carbonate of potassa, are, by the action of caustic lime, converted into free, caustic potassa, attacking and quickly dissolving the bones.

The following practical example will illustrate the necessary proceeding:

Suppose the wood-ashes to contain about 10 per cent. carbonate of potassa, and that 4,000 pounds of bones are to be worked up: then we take 4,000 pounds of ashes, 600 pounds of caustic lime, and 4,500 pounds of water; a ditch some two feet deep, of such width and length as to hold 6,000 pounds of the mixture, is dug, and near it a second ditch, being some 25 per cent. larger, and both lined with boards. The lime is then slaked, and, when crumbled to a powder, mingled with the wood-ashes, and 2,000 pounds of bones piled up in layers

and covered up with the mass in the smaller ditch, 3,600 pounds of water added, and the whole left to itself. From time to time small quantities of water are added to keep the mass moist. As soon as it is found that the bones are so far decomposed that when pressed between the fingers they are soft and crumble, the second portion, *i. e.*, the other 2,000 pounds of bones, is brought into the larger ditch and covered in layers with the first mass, and left to decompose.

After the whole mass has undergone decomposition, it is suffered to dry by removing it, and, lastly, to facilitate its reduction to powder, mixed with 4,000 pounds of dry turf, or some other dry vegetable earth. The mixture is repeatedly stirred about with a shovel, and may at once be brought upon the fields. Manure prepared thus will contain about 12 per cent. of tribasic phosphate of lime, (3 CaO, Po_5,) 2 per cent. of alkaline salts, and 6 per cent. of nitrogenous matter.

This manure must, from its composition, produce an admirable effect upon grape-vines.

Liebig, in generally recommending this new fertilizer, thinks an addition of gypsum an improvement for many kinds of fruits.

BRITISH IMPORTS OF THE PRESENT YEAR.

The following are some of the imports into Great Britain for the seven months of the present year ending July 31, which are of especial interest to producers in the United States—beginning with cotton:

From—	Seven months ending July 31—		
	1864.	1865.	1866.
United States ..... cwts..	98,824	82,963	3,635,202
Bahamas and Bermuda ..... do...	186,858	155,833	5,931
Mexico ..... do...	157,086	249,509	3,145
Brazil ..... do...	218,070	268,767	450,166
Turkey ..... do...	138,558	155,826	82,504
Egypt ..... do...	796,853	904,319	690,267
British India ..... do...	1,889,997	1,411,296	2,888,141
China ..... do...	483,328	256,928	13,496
Other countries ..... do...	155,050	208,621	164,134
Total	4,124,624	3,694,062	7,932,986

The above is an instructive exhibit. It shows a rapid approach to the attainment of an average cotton supply, and proves that this country still holds a controlling influence in the cotton trade. From a mere trifle in 1864, the receipts of 1865 from the United States assumed the leading position, distancing India by thirty per cent. These receipts of seven months—3,635,202 cwts.—are equivalent to 1,017,856 bales, of 400 pounds each. The receipts of six months—904,704 bales—cost $126,349,855, or 34½ cents per pound. The remainder of the imports of six months, from all other countries, amounted to only 1,015,462 bales, costing $110,394,940, or 27 cents per pound. Here is a difference between our cotton and that of all other nations of 7½ cents per pound, or more than twenty per cent. But this includes not only the boasted competition of British India, which has been so sedulously fostered, but the contributions of Egypt and other localities, of comparatively high cost. It will be seen that the Egyptian production is falling off, notwithstanding the

prices received were the highest on the list. Comparing, then, the India cotton alone with ours, it is found that the average price, from January to July, 1866, was 22 cents per pound, 12½ cents per pound less than the cotton of the United States. Besides, the time of transportation is so much longer from India, that these prices are relatively higher than they otherwise would be, responding more slowly to the demands of a falling market.

Another fact is shown by this table, which illustrates the policy of England. A decrease is indicated from Egypt and China, and an increase from Brazil and India, the latter a colony, and Brazil a non-manufacturing country, whose increasing trade is fostered and courted.

The following, from the Bombay Gazette of August 6, confirms the views above expressed relative to the competition of India cotton:

"When the American war shut off the supply of cotton from that continent, Indian cotton came at once into demand, and the price rose with the increased demand. From four pence to twenty-four pence per pound the staple advanced with scarcely a check or a fall. If prices receded at times, it was only to recover themselves almost immediately, so that shippers in Bombay had little or nothing to fear from falling prices; and all, or nearly all, the shipments resulted in large profits. For three years this was the state of the cotton trade in Bombay—years of small risks and large profits. Bombay became immensely rich, money decreased in value, and there was general prosperity. With the close of the war and the opening of the American ports Indian cotton began to fall fitfully but steadily. And during receding prices the conditions of the trade in Bombay became reversed—heavy risks and heavy losses. Even now, though a singular good fortune has attended upon Indian cotton, maintaining prices far above what must be regarded as their normal limit, the tendency upon the whole is downwards. And as the few exceptional circumstances which yet remain to give more than ordinary vitality to the Indian cotton trade are removed or borne away by increasing supplies from other quarters, prices in all probability will continue to recede until they reach that limit at which the Indian ryot can afford to undersell his competitors: this limit is believed to be about 100 rupees per candy."

This limit, expressed in our currency, would be about nine cents per pound.

The following table exhibits the pitiable show made by the United States in supplying England with her breadstuffs:

From—	1864.	1865.	1866.
Russia ..... cwts..	1,603,580	3,510,434	3,988,969
Prussia ..... do...	2,746,198	2,729,900	2,450,902
Denmark ..... do...	469,425	297,112	244,952
Schleswig, Holstein, and Lauenburg ..... do...	181,896	159,211	117,530
Mecklenburg ..... do...	358,254	312,333	455,222
Hanse towns ..... do...	384,761	267,991	489,720
France ..... do...	437,394	678,791	3,162,206
Turkey, Wallachia, and Moldavia ..... do...	273,238	407,469	300,973
Egypt ..... do...	366,856	.....	8,738
United States ..... do...	5,062,724	405,307	323,160
British North America ..... do...	495,375	101,594	8,789
Other countries ..... do...	262,583	670,607	2,233,274
Total	12,552,284	9,540,749	13,784,435
Hanse towns ..... cwts..	204,433	140,041	160,477
France ..... do...	1,391,363	1,409,217	2,974,122
United States ..... do...	1,214,343	150,188	168,949
British North America ..... do...	211,828	70,464	6,166
Other countries ..... do...	68,715	83,899	143,108
Total	3,090,682	1,853,809	3,452,822
Indian corn ..... cwts..	1,408,500	2,645,872	7,653,850
Indian-corn meal ..... do...	2,989	4,847	9,979

BRITISH IMPORTS OF LIVE STOCK.

The food supply of Great Britain is exercising the minds of British economists and the people generally. Before the advent of the cattle plague the imports of live stock were heavy and constantly increasing; now the scarcity is more severe, and must so continue. It will be seen that the importation has reached a million and a third of animals yearly, saying nothing of poultry *and a million and more of eggs daily.* The following is a table of these imports:

Years.	Cattle.	Sheep and lambs.	Pigs.
1856	83,306	145,059	9,916
1857	92,963	177,207	10,678
1858	89,001	184,482	11,565
1859	85,677	250,580	11,084
1860	104,569	320,219	24,452
1861	107,096	312,923	30,308
1862	97,887	299,472	18,162
1863	150,898	430,788	27,137
1864	231,734	496,243	85,362
1865	283,271	914,170	132,943
1866, (to June)	81,934	411,729	29,873

The following is a statement of the range of prices, for six years past, at the Metropolitan Market, London. The prices are not per pound, but for *eight pounds*—the shillings being (very nearly) twenty-five cents in federal money. It will be seen that mutton, as for many years past, is higher than beef—being, at the present time, from 85 cents to $1 50 per stone of eight pounds, or 10½ to 18¾ cents per pound:

	Aug., 1861.	Aug., 1862.	Aug., 1863.	Aug., 1864.	Aug., 1865.	Aug., 1866.
	s. d. s. d.	*s. d. s. d.*	*s. d. s. d.*	*s. d. s. d.*	*s. d. s. d.*	*s. d. s. d.*
Beef, from	2 10 to 4 10	3 4 to 4 10	3 4 to 4 10	3 4 to 5 0	3 0 to 5 6	3 8 to 5 6
Mutton, from	3 2 to 5 4	3 8 to 5 4	3 6 to 5 2	3 10 to 5 4	4 4 to 6 8	3 10 to 6 0
Lamb, from	5 0 to 6 0	5 0 to 6 4	5 0 to 6 8	5 8 to 6 8	6 0 to 7 0	5 8 to 7 4
Veal, from	3 4 to 4 6	4 0 to 5 0	3 4 to 4 8	4 0 to 5 0	4 2 to 5 4	4 0 to 5 4
Pork, from	3 10 to 4 18	3 8 to 4 10	3 6 to 4 6	3 6 to 4 6	4 0 to 5 0	4 0 to 5 0

AGRICULTURAL STATISTICS OF GREAT BRITAIN.

A statement of returns of the recent stock census of Great Britain was published in the monthly report for July. The subject of agricultural statistics is exciting the attention of the wisest political economists and most intelligent farmers of that realm. The Board of Trade, or "Committee of Privy Council for Trade," is now engaged in obtaining, through the co-operation of the "Under Secretary of State" or "Home Secretary," and the county magistrates under his direction, returns of the extent of land in Great Britain under the various crops of the present year. The following are extracts from the communication of the Lords of the Privy Council of Trade to the Home Secretary:

"The Board of Inland Revenue have undertaken the distribution and collection of the schedules prepared by the Board of Trade for the return of the acreage of crops; and my lords trust that the officers employed upon this occasion will be able to carry out this inquiry as successfully and with as little objection on the part of the occupiers as the officers who were charged with the duty of collecting the returns relating to live stock.

"I beg to enclose, for the information of the magistrates, copies of the form of schedule which will be issued for the return of crops, and of the directions for the proper filling up of the schedule which will accompany it.

"The return will only be required from occupiers of and above five acres of land, and the schedules will bear the post office stamp for free transmission to and from the several occupiers.

"My lords trust that the magistrates will be good enough to endeavor to remove any prejudices upon the part of their tenants or other neighboring occupiers against making a return of the extent of their crops, which is only required for public information, and will only be published in an aggregate for the counties or other large divisions of the country.

"The occurrence of war in many of the corn-exporting countries of Europe, causes a knowledge of the producing capacity of the United Kingdom to be a matter of considerable interest at the present time."

DETERIOATION OF SUGAR CANE.

The cultivation of sugar cane in Louisiana was commenced more than a century ago. In 1828 the crop was 88,000 hogsheads, of 1,100 pounds each, according to the report of Mr. Champonier, becoming less until 1834, when it was 100,000 hogsheads; in 1840, 87,000; in 1844, 200,000; then sinking to 140,000 in 1846; in 1847, 240,000; in 1853 rising to 449,324, and falling in 1855 to 231,427. The census report of 1860 places the crop of the previous year at 221,726 hogsheads of sugar, and 13,439,772 gallons of molasses.

Cultivators in Louisiana write us that the cane is badly deteriorated. It has been stated that there is a remarkable tendency in some of the best varieties to deteriorate rapidly in that State. Efforts, either public or individual, should at once be energetically put forth for the regeneration and extension of the sugar culture. There is no doubt that such efforts would be well repaid in the future, as they have been in the past. The following suggestions of a correspondent in St. James parish, Louisiana, are worthy of attentive consideration:

"The Bourbon cane, or Creole cane, as it is called, was originally introduced and cultivated here. About the year 1828 it degenerated rapidly, and soon became worthless, when, fortunately, Judge Coirou, a good sugar-planter, residing below the city of New Orleans, in the parish of Plaquemines, discovered in the vicinity of Charlestown, South Carolina, or Savannah, Georgia, a beautiful ribbon cane, unknown here, and so called from its variegated bright longitudinal stripes of purple, yellow, and green color. It was a native of Java, no doubt brought thence by vessels in the Java coffee trade, and cultivated for the beauty of the plant. It has a thick, erect, dark-green foliage, contrasting with a large and beautiful sweet sugar cane. After having cultivated it on his plantation, Mr. Coirou soon discovered that its strong roots, thick skin or rind, and particularly its large coarse eyes, (from which it grows,) protected its germinating power from the damaging effects of frosts. It matured in eight months, was of hardy habits, making a large grain sugar, suited our soil and climate better than any other known variety, and produced from two and a half to three hogsheads of sugar per acre, proving a great success. It soon spread all over the sugar region of our State, just in time to save the sugar culture from being abandoned. Unfortunately it has also degenerated, and requires promptly to be renewed to save us from impending ruin. It will not yield more than one-half the sugar it used to produce formerly, and does not grow to half the size it once did, does not rattoon well, (*i. e.*, produce from the stubble,) and has become nearly all red, or of a dirty green color. It has a bad unripe taste when cultivated in new rich land, (which is certain proof of its degeneracy,) and has lost much of its hardy habit. This is no exaggerated picture. Permit me to add that twice our government expended large sums in trying to furnish us from abroad with suitable canes, and both times failed, owing partly to bad management and partly to a promiscuous gathering of all sorts of canes imported with worms.

"The canes imported in 1856 in Louisiana from South America and Brazil were boxed up carefully, and rotted. There is no cane suitable for us coming from those countries or from the West India islands, where they cultivate generally the Otaheite cane (infested with worms) and other sorts having tender skins or rinds with small eyes, and being too delicate to stand frost. We have to resort to India and procure the real *Java Ribbon cane*. It is found in the Straits settlements of Penang, Batavia, Singapore, and Java, in its natural state, as fine as it ever grows. The Malays call it 'Tibboo Batavee,' which means Batavia cane. A few hundred canes will answer if properly managed. They should

be dug up by the roots just as they grow, and put up in bundles of eight or ten canes tied together. The leaves should be turned down towards the roots, and packed head and tail, with some straw or dried cane leaves, so as to protect the eyes; they should be handled with great care so as not to bruise them. They should be placed on board in a cool place, exposed at times to the air if possible, which will save them from dry rot. On approaching our country they should be well guarded from being frosted. The exposure to cold at 30° Fahrenheit will destroy their vitality and render them useless by killing the eyes. This might all be done by our national vessels which pass there; or our Boston or New York clippers, if requested by your department, would take pleasure in complying with our wish and in rendering so important a service to our portion of the country.

"There is also in the same vicinity, in the kingdom of Assam, on a large river like our Mississippi, a very large red cane, called by the Malays 'Tibboo merali,' red cane, which resembles and has nearly the same good qualities of the ribbon cane, and which might be advantageous to us. A few could be imported. All the other varieties do not suit us, and we do not want them. We do not wish to receive any from the West Indies for fear of introducing the worm called the 'grubber,' and getting unsuitable varieties.

"Some time after 1840 a few ribbon canes were sent from here to Tabasco, Mexico, and cultivated there on the river Tabasco. They have flourished there, the soil and climate suiting them well. I have seen canes brought from there which had not degenerated, and were as good as when first introduced. This is owing partly to the fact that they do not replant the cane but once in ten or twelve years, and also to the extreme richness of the soil in a warm climate. We might get some cane from there were it not for the state of the country, which is now in great confusion and anarchy.

"A schooner of fifty or sixty tons, drawing seven or eight feet of water loaded, can be freighted here to go after a load of canes for about $2,000 in gold, and would make the trip in two months. The best season for planting such canes would be in October or November."

DONATIONS FROM CALIFORNIA.

Persons visiting the museum of the Agricultural Department are always interested in noting the samples of Californian products, some of which are so exceptional in variety and extraordinary in size, as compared with those of the east. Californians have been public-spirited and generous in furnishing the department with these specimens.

Valuable additions to these collections have just been received of seeds and wines, which made the long voyage via Cape Horn. As much of the wine was of the last vintage, not having undergone its second fermentation when it started, it was expected that some loss would result.

The seeds were from Daniel L. Perkins, of Oakland county, numbering 101 bottles, as follows: Corn, 4; beans, 7; peas, 9; melons, 3; cucumbers, 4; squashes, 9; tomato, 7; cabbage, 13; cauliflower, 2; Scotch kale, 1; lettuce, 11; spinach, 2; peppergrass, 1; parsnip, 2; tobacco, 2; beets, 7; turnips, 5; kohl rabi, 2; carrots, 3; onions, 1; radish, 6.

The wines were sent by B. N. Bugby, Natoma vineyard. Eighteen bottles, one broken, one cork out—nearly empty; Griswold & Sons, Salt Spring valley, four bottles; Schell & Krouse, Knight's Ferry, four bottles, two broken; T. A. Paley, Woodbridge, San Joaquin, two bottles, one broken.

Specimens of the soil and subsoil of these different vineyards were also received with the wines.

Among these Californian products, are six bottles of wine from Messrs. Schell & Krouse, of their vintage of 1865, for analysis, together with samples of soil from their vineyard in Stanislaus county. The previous vintages have obtained much celebrity and several premiums. The soil of the vineyards is largely composed of the debris washed down from the volcanic regions of the mountains. The site has a southern aspect, and is flanked by hills composed of lava, white chalk, red and yellow ochre, iron rock, and sandstone. The wine is made from the Mission grape of California. Eight thousand cuttings were set out in 1860, were well cultivated and irrigated for two years,

since which they have received no artificial irrigation. The vines have been trained about 18 inches high, with bearing buds from 3 to 30, varying according to the strength of the stalk. Last year (1865) some of these stalks produced 70 pounds of well-matured grapes. The vineyard contains 28,000 vines, 12,000 of which will bear this year, and 21,000 cuttings were set out this spring. All the vines look well, and the bearing vines promise an abundant yield. They expect to make at least 10,000 gallons of wine next fall. There is nothing peculiar about making the wine. The grapes were permitted to get very ripe upon the stem, were then picked, crushed between two rollers, and dropped into a vat holding about 600 gallons, where they were left to ferment in the skin and stem from two to three days, when the juice was expressed and put into tanks of 600 gallons capacity to complete fermentation. From these tanks the sample was taken.

From B. N. Bugby, of the Natoma vineyard, at Folsom, nine varieties of wine, with a sample of brandy are received. The Beni Carlo is fermented on the skins for ten days to give it color and aroma. The other varieties are made by pressing out the juice and fermenting in the casks. The samples are as follows: White Muscat; Verdelho, white; white Malaga; black Zuifindol; Beni Carlo; white Reisling; white Pincaux; red Traminer. The vineyard contains about 48,000 vines, or about 56 acres, all of it broken and uneven. Not one rod of level land is contained in the vineyard. The soil is very shallow; the bed rock is of slate and "stands vertically."

Four bottles of Mission grape wine were received from J. W. Griswold & Sons, of the vintages of 1864 and 1865. Their vineyard is located in Calaveras county, on a southern slope, 1,000 feet above tide-water, near the great copper leads. Its soil is of a red color, very similar to that which is so common among the foot-hills of this section.

An analysis will be made of these wines and soils, and a report upon them will be given hereafter.

CATTLE IN TEXAS.

The table showing an estimate of the live stock in the southern States at the present time, (which is found on another page,) places the number of cattle in Texas at 3,111,475, against 3,535,768 in 1860. No other State on the list comes so near the standard of 1860. All kinds of farm stock have been maintained in a similar ratio, while sheep have been increased, according to this estimate, about twenty per cent. Immense numbers of cattle are already collected for driving or shipping to a market. Our correspondent in Calhoun county (on the Gulf coast) reports as many cattle as in 1860, held at prices remarkably low, as compared with prevailing rates in this section of the country. Beeves may be had for $15 (in specie) per head, and steers at $4 to $5. It has been estimated that $1,000,000 worth of stock is ready to go to market from Texas at the present time.

INSECTS.

The following extracts from correspondence will serve to illustrate the losses incurred through these pests of agriculture:

Trimble county, Kentucky.—"The tobacco-worm is the most formidable adversary the farmer has to contend against in the culture of the weed, and this season many planters in this county, and elsewhere, are providing and administering poison to the fly which lays the egg. The process generally pursued is

to drop a few drops of ratsbane, or other poison, in a liquid form, into the flower of the Jamestown weed, wild morning-glory, &c., into which they are sure to insert their large bills and die almost instantly. With the death of each fly, or miller, as they are familiarly termed, three to five hundred eggs are destroyed, each of which produces a worm."

Hardin county, Kentucky.—"Late crops of potatoes are injured by drought and the bugs."

Jackson county, Florida.—"The caterpillar has appeared in the cotton fields, too late, however, to do much damage." [This is doubtless the *Noctua xylina* of Say.]

Jackson county, Illinois.—"I wish to tell you how I have got rid of the *aphis*, or plant-louse—a method practiced by myself and neighbors for many years. After the louse makes its appearance, pull off a waste leaf and turn it upside down on the cabbage that is lousy. Early the next morning the lice will be collected in great numbers on the under side of the leaf. If all are not thus caught and burned, repeat the operation." [This is worthy of further trial.]

Woodford county, Illinois.—"Potatoes have been damaged to some extent by a beetle, never seen here before the present season, about one-third of an inch in length, and having ten pale yellow and black longitudinal stripes upon its back." [Probably the ten-lined spearman, *Doryphora ten-lineata.*]

Huntington county, Indiana.—"Wheat has been damaged by the weevil." [Probably the wheat midge.]

Madison parish, Louisiana.—The [cotton] army worm is reported to have made its appearance. [*Noctua xylina* of Say.]

Allegan county, Michigan.—"The regular plum curculio is at work all over the county upon the peaches. Many orchards are entirely stripped. We have also a blight among the apple trees, which, I think, must be the 'insect pear blight' described by Downing in his work upon American fruits. It seems to be general."

Ingham county, Michigan.—"The large white grub worm (probably the larvæ of the beetle species) is doing much damage to our pastures and meadows. Nor are corn and potato crops exempt." [Probably larvæ of the May-bug or beetle, *Lachnosterna.*]

Indiana county, Pennsylvania.—"Potatoes are being somewhat injured by the bugs." [Probably the ten-lined spearman, *Doryphora ten-lineata.*]

Hamilton county, Tennessee.—"The cut-worm is very destructive to late corn." [Probably the caterpillar of an agrotis.]

Dewitt county, Texas.—"The last few days exhibit *the worm*, which may or may not prove fatal to a large yield of cotton." [*Heliothis armigera.*]

Hardin county, Texas.—"The cotton army worm appeared in some places about August 12, and with the wet weather will cut the cotton crop short." [*Noctua xylina* of Say.]

Conejas county, Colorado.—"In June there appeared millions of grasshoppers in this valley, which threatened in some districts to destroy all vegetation, but before they could spread over the entire country a *green fly* made its appearance which truly proved our salvation. As I found upon close examination, these flies deposited their eggs in the joint or neck of the grasshoppers, which, after two weeks' time, caused their death. The same examination was made by the military officers at Fort Garland, with like results." [Will our correspondent send some of the green flies to the department for examination?]

Goliad county, Texas.—"The caterpillar is now damaging the cotton very much, and it is feared that nine-tenths at least of the crop will be destroyed."

The following is an extract from a letter to our entomologist:

Atchison, Kansas.—"On the 11th instant we were visited by an innumerable host of grasshoppers, which are now devouring everything that remains green. Our late corn, our late potatoes, our young wheat crop, and our garden vegeta-

bles are being consumed. You are aware that the crops of last year were destroyed by them in Colorado, and that the crops of this spring were destroyed in Montana, the grasshoppers in each case having made their appearance in the fall previously. In the month of May, or 1st of June, these grasshoppers were at 'Junction,' about 300 miles west of Fort Kearney. About four weeks ago they reached Fort Kearney. On the first day of this month they were in Riley county, one hundred miles west of Atchison. They move in a direction south of east."

EXTRAVAGANT ESTIMATES OF AVERAGE YIELDS OF COTTON.

The extravagant calculations and expectations of newly-fledged cotton-planters, indulged last autumn and winter in advance of actual experiment, have doubtless been materially modified by the experience of this summer. These planters have learned ere this that the production of two bales, or even one bale, per acre, depends first upon the selection of a soil of the best quality, and afterwards upon a multitude of contingencies like those in which all our southern correspondence abounds, and from which no season or place is ever entirely exempt. A few instances will suffice:

Morgan county, Georgia.—"The spring was backward and wet. The summer has been remarkably warm and dry. It is the general verdict of old planters that there has not been such an unpropitious season for crops since 1838. Corn has been a complete failure in places where the drought was severe; in other sections it is an average crop. Cotton almost failed in the spring on account of poor seed and the heavy rains. Now the drought has almost finished it. We lack a good supply of seed; the old kinds have degenerated to such an extent that it is folly to use them."

Macon county, Georgia.—"Up to the 17th of June we had heavy and almost continuous rains, succeeded by a drought of three weeks and three days; then two or three heavy rains, succeeded by another drought of three weeks and three days; then rain almost every day since. The recent heavy rains have given the cotton the rust, and it is rapidly spreading over the fields, with few exceptions."

Kemper county, Mississippi.—"The corn crop was seriously injured by the late rains in the early part of June, and the cotton crop from the same cause, together with bad seed. An excessive drought set in after that time, and continued until the latter part of August, with the exception of partial showers. There are great fears entertained that many families will actually suffer."

Issaquena county, Mississippi.—"Up to the 20th of this month (August) we had no rain. From the 20th to the 28th we have been almost flooded. Consequently our cotton must shed off all the squares, and it is too late for others to form and make."

Lancaster county, South Carolina.—"We have had a continued drought of nine weeks. Our grain crop, and also cotton, is exhausted beyond recovery. The spring was wet, and the crops were small in consequence when the drought set in."

De Kalb county, Alabama.—"From the 20th of June until the 19th of August there was not enough rain to wet the parched earth to the depth of an inch, making it the most withering drought that we have had for a number of years."

New Carthage, Madison parish, Louisiana.—"Crop promises poorly. The army worm has made its appearance in the parish. It commenced rainiug on

the 20th instant, after a drought of several weeks—an event which will prove most injurious to the cotton."

Lavaca county, Texas—"Owing to heavy rains and ravages of worms, the cotton crop is in a very fair way of being cut short."

Macon county, Georgia.—"A great deal of the crop has been abandoned, or is so hopelessly in the grass that it might as well be. I suppose that one-fifth at least of the cotton crop is in this condition."

Giles county, Tennessee.—"From a recent tour through the cotton States, I am satisfied that we have the best prospect for a good crop of any of the seceded States."

Greene county, Georgia.—"Our cotton prospects are gloomy indeed. Whole fields have been abandoned to the grass."

FREEDMEN'S LABOR.

Our correspondence from the south is full of this important subject, as might naturally be expected. So violent a change of the labor system must inevitably produce extensive and discouraging derangements of agricultural industry. The wonder has been, with those who appreciated the radical differences between the two systems of labor and the natural effects of the involuntary system upon both laborer and proprietor, that so much of successful and harmonious adjustment should be effected as has already been attained. The negroes, as a body, were ignorant, and were expected to follow largely the bent of their own inclinations. To be *free* was to have a perpetual holiday, see something of towns and town life, and ape white people in taking their ease and doing as they pleased generally. On the other hand, the whites, who knew well how to manage them as slaves, were scarcely expected, in view of the excitements and irritations of the past and present, to exhibit a much greater degree of wisdom in dealing with their former slaves as freedmen. Both parties, by former education and resultant prejudices, were not well adapted to achieve success in the new *role* of free labor.

The situation was really perplexing, not to say distressing. The great demand of the day was for cotton; the negroes were the cotton producers; and the bread of laborers and employers depended upon the price of it, which, for the time, was sufficiently tempting. But these laborers lacked confidence in the employers, who, in return, had no confidence in the persistence and continuity of labor for which a contract should be made, and therefore dared not risk a failure that would involve a whole year's calculations. So the negroes last fall were to make no engagements at Christmas for the new year, and the whites were to turn adrift all hangers-on from the plantations, and sick and lame and helpless infants must expect no further aid. When Christmas came, whites were surprised at the alacrity with which contracts were entered into, and blacks were often astonished at the liberal terms offered by their old masters. So it proved then; and equally at fault will be the present prophecies of refusals of freedmen to renew contracts for another year. They supply the best attainable labor, the only skilled labor, that can be obtained at present for cotton production; and it is for the mutual interest of both parties to unite labor, capital, and wise superintendence in cotton culture. The reader will not fail to notice the chaos of conflicting and contradictory views upon this question in the following extracts from our correspondence. A fair analysis will satisfy intelligent people that employers and employed are gaining a better understanding of their new relations, and that time and experience are modifying the difficulties that have heretofore existed antagonistic to harmony and cordial co-operation. The following are brief extracts from letters of correspondents:

Beaufort, Washington county, North Carolina.—"Nearly all the negroes were carried off from this country in the course of war; since its conclusion about one-third of the former number have returned. As a general thing the women and children do not work in the fields at all; none but able-bodied hands are employed; the general estimate is that they now do about three-fifths the work they formerly did, that is, those employed do; where they rent land they work harder than they ever did; they will not work more than half the time at any price. One day's work will feed them for a week. * * * * We would welcome white men from any country," &c.

Brunswick county, North Carolina.—"The critical time for rice has yet to come, and unless our laborers exhibit more energy and zeal in the performance of their work, the whole crop, it is thought, will fall a prey to the rice birds."

Barnwell district, South Carolina.—"Not unfrequently the negroes would refuse to contract if an overseer was employed." Loud complaints are made in this letter of the idleness, ignorance, and vicious propensities of the negro. It is said that upon their own crops they work more carelessly than upon those of their employers; that they ape the manners and customs of their former mistresses and masters; that they refuse offers of work and break contracts when made; and, finally, that "they *cannot* make more than subsistence to the first of January, 1867."

Georgetown district, South Carolina.—"The freedmen having guns rove about the open woods, (our only pasturage,) killing the stock wherever they can find them. * * * It is difficult to get them to do a small day's work, and that, when said to be done, is done in such a careless and slovenly manner as not to be worthy of the name work."

York district, South Carolina.—Apprehensions of a famine are entertained, "owing to the drought and want of proper culture, which cannot be obtained under the present system of working freedmen."

Macon county, Georgia.—"A few of the freedmen are working tolerably well; a great many of them work neither much nor well; a great many are crowding into the towns and villages, where they manage to subsist somehow; a great many of the women are living in idleness upon the plantations, depending upon the labor of their husbands or children for support. Their labor is not of the reliable character it used to be, for they cannot be compelled to exert themselves. They are seldom in a hurry, no matter how pressing the necessity, and they can leave you if they choose at any time they please, by going out of the county into the jurisdiction of another Bureau officer. The fact is, when a negro gets tired of work, and won't do it, the most of the planters know that there is now no method by which he can be compelled to perform it, and they let him go without putting themselves to any trouble about it."

Greene county, Georgia.—"The freed negroes will not work, but live by stealing. It is not safe for a hog, or sheep, or cow, to run at large."

Washington county, Mississippi.—"I doubt if the negro will ever work again so well as he has this year. Thousands of planters will rent, or give up raising cotton, next year."

Hinds county, Mississippi.—"I am satisfied that the free negro will make a good average laborer when he learns that he is no longer the foundling of the government. I find that the negroes labor more faithfully and are better contented as they are removed from the influences of the 'Bureau.' The men, in most instances, are working very well."

Pike county, Mississippi.—"The difficulty of making the freedmen available in the production of cotton is inducing many to turn their attention to the cultivation of grapes."

Catahoula county, Louisiana.—"The freedmen do pretty well. Some few persons have had them quit, but there are a great many who will not work at all. It seems to be the opinion of all that they will be worse next year, and it

is a question with me what we shall do with those who will not work. We won't support them; and those who are willing to work don't want to do it. We have no influence to persuade them; I do not have aught to do with any but those I have employed, all former slaves, and they will do well. They are well pleased, and say that as long as I treat them as well as I do, they do not want any better home. If we could keep them away from towns and villages, and impress them with the idea that they must work, we could do as well as ever, and better too, if cotton continues to command a high price."

New Orleans, Louisiana.—"I would say, in connexion with the foregoing, that not more than half the labor is performed now in comparison with forced or slave labor."

Hardin county, Texas.—"Three-fourths of the freedmen have left and gone to the cities and towns. Crops planted are small in comparison with 1859, and almost all worked by white labor."

De Witt county, Texas.—"The agents of the Bureau arrived too late to answer the demands of the cotton crops. The blacks, in a majority of cases, refused to make contracts for more than a month, thus making the labor too uncertain for many planters to engage in the culture."

Mississippi county, Arkansas.—"'Proportion of hands to acreage compared with 1859,' I understand to mean how much land one nigger made free will cultivate compared to one slave in 1859. I say seven-tenths, some say three-fourths."

Hamilton county, Tennessee.—"There is a disposition on the part of the natives here to depreciate colored labor unjustly, for, properly treated and managed, the figures would show an equality between whites and blacks in this respect. Both work from a seemingly new impulse."

Fayette county, Tennessee.—The negroes are indisposed to work unless by threats, and an immense amount of coaxing. The prospects are so discouraging that a great number of planters say they are abundantly satisfied with the experiment of freed labor. It is an utter impossibility to force the negro to comply with his contract. They leave the plantation whenever they please—stop work when it is absolutely necessary in grassy seasons, thus forcing the planters to go out and hire labor at exorbitant prices. Instances have been known where from three to four dollars per day and board have been given to save the crop."

Giles county, Tennessee.—"There are only about one-half the number of negro fellows in our county that there were in 1860, having been killed or died of disease in the Union army. There is a great disposition among them to flock to the towns and cities. Nine-tenths of all laborers engaged in farming never worked better."

CASUAL NOTES.

Imported fertilizers.—France is following ambitiously in the wake of England in improvements in agriculture. Her importations of fertilizers increase as this improvement progresses. In the first six months of the present year these imports have been as follows: Guano, 331,822 quintals; nitrate of potash, 5,694 quintals; nitrate of silver, 79,195 quintals; other manures, 49,296 quintals. A small portion of the nitrates of potash and soda have been exported.

The imports of fertilizers into England in the same time have been: guano, 72,352 tons; bones, 38,859 tons; besides a considerable quantity of other fertilizers.

The imports of fertilizers into the United States were, in 1864: guano, 9,568 tons, worth $138,555; gypsum, 31,114 tons, worth $28,012; and a considerable quantity of nitrate of soda, and other special fertilizers.

European crops.—There is less than an average yield of cereals in France, and a great activity has resulted in obtaining supplies from neighboring countries, followed by advances in the price of wheat. The English harvest, too, is somewhat deficient.

A promising indication of the future prosperity of the south, where a large element of the population has heretofore dreaded more the necessity of labor than the endurance of poverty, is found in the following extract from a letter from Texas:

"I would say, if you will promise not to tell any one, that there are some white folks here that have actually gone to work."

The amount paid for butter and cheese is scarcely realized. Consumption has greatly increased, in ten years past, in both products. The imports of butter alone, in 1865, into Great Britain, amounted to nearly thirty million dollars. The people of the United States, on the other hand, exported, last year, 21,388,185 pounds of butter, worth $7,234,173, and 53,089,468 pounds of cheese, worth $11,684,927.

A correspondent in Lamar county, Texas, says: "The season has been a peculiar one. I have been planting in this and the State of Mississippi for nearly thirty years, and have never known as difficult a season to make a crop. more rain has fallen in the last six months than I ever saw fall in any one year before; but I do not attribute the failure to that cause. In the first place, our lands were in a worse condition than I ever knew them, from the fact that nothing but grain had been raised for several years, and owing to the troubles of the country, planters had become very indifferent as to the cultivation of their lands. In the second place, the change in the status of the laboring class had a very decided effect upon the planting interest."

A correspondent in Berkeley county, West Virginia, reports a heavy acorn crop, and says that much mast-fed pork will be produced in that vicinity. He reports a poor yield of hay, scarcely a sufficiency for home consumption and none for market, but returns a product of 2,670 tons from 2,750 acres. Berkeley and Hampshire, between the mountains and the Shenandoah valley, are famous for the production of grass and hay, as the fact above, in a year of partial failure, would indicate. Clarendon, Arkansas: "The farmers have gone to work with a hearty good will, and if the price of cotton continues remunerative, it will require but a few years for the country, at least this section of it, to be restored to its former state of prosperity."

Wheat in Texas.—A correspondent at Honey Grove, Texas, says: "No spring wheat is raised in this section, nor so far as I can learn in northern Texas. The varieties principally raised are the smooth-headed May wheat, the Mediterranean, and the old white wheat to a limited extent. The usual average of wheat on the black lands of the above-mentioned counties is about eighteen bushels to the acre, but although the prospect was very fine last spring, it was blasted by the excessive rains. The quality, size, and weight of the wheat is decidedly inferior to that of 1865. We usually sow wheat from the middle of September to the first of November."

Sheep.—De Witt county, Texas: "Sheep are beginning to receive their merited attention. The assessor's roll for 1860 shows the number in this county at that time to be only 5,618 head, while in 1866 it is estimated that they will reach 50,000. The value in 1860 is put down at $15,945, in 1866 at $59,989.

Owing to the large numbers brought in from Mexico or sale our sheep, though really better than in 1860, are estimated at about one-third the value then. The low price of Texan wool also exerts an influence." Middlesex county, New Jersey: "The clip of wool and number of sheep are steadily increasing, and farming generally is done more intelligently, and consequently more thoroughly than formerly. Your department contributes its full share to this end. Your monthly reports are now looked for, and received with great solicitude and eagerness." Racine county, Wisconsin: "One-fourth more sheep than in 1865, but clip much lighter." Butler county, Kansas: "At least double the number of sheep in the county over last year."

Hogs.—Butler county, Kentucky: "Hogs are dying of cholera." Russell county, Kentucky: "Our hogs are dying off rapidly of cholera." Catahoula Parish, Louisiana: "Cholera has reduced the hog stock sadly this summer. The people are discouraged." Baltimore county, Md: "The number of hogs is two-tenths more than last year, and in good condition." Fayette county, Tennessee: "The hogs on all the plantations have been killed and eaten by negroes. They also trade them off with negroes living in villages." Beech Grove, Coffee county, Tennessee: "The number of hogs is more than will be needed for home consumption." Hardin county, Texas: "Hog cholera has destroyed almost all the hogs through my district." Berkeley county, West Virginia: "The hog cholera has increased very much in this county since August 1. The treatment with brimstone and copperas has proved the most effectual."

CONDITION OF THE CROPS IN AUGUST.

The following tables are compiled from returns of statistical schedules for August. For the first time all portions of the country are included. It is southern restoration which must be mutually agreeable and profitable to both sections and all parties. The correspondence from the south is generally prompt and full. In a month or two the corps of southern correspondents will be more complete and better organized.

A special effort was made to secure an estimate of the farm stock of the south, about which all have been so much in the dark. Returns on this point have been sufficiently full to warrant averaging for percentages in each State of the last census returns. From these, the numbers in each State have been calculated, with the following results:

Table showing the estimated number of live stock in 1866.

States.	Horses.	Mules.	Cattle.	Sheep.	Hogs.
Alabama	82,591	67,012	409,934	307,229	909,127
Arkansas	79,913	38,450	232,797	93,266	316,340
Florida	7,530	6,873	256,119	6,031	108,696
Georgia	71,924	60,641	583,411	384,463	1,425,281
Louisiana	33,842	54,139	227,059	90,626	272,845
Mississippi	67,015	63,112	401,449	282,105	812,367
North Carolina	99,436	33,916	496,476	399,126	1,261,753
South Carolina	48,675	35,567	315,201	270,880	482,889
Tennessee	226,887	69,489	382,365	510,389	1,079,767
Texas	293,128	60,167	3,111,475	904,035	1,193,233
Virginia	172,547	28,710	543,122	761,586	959,951
Total	1,183,488	578,076	6,959,408	4,009,736	8,822,249

This exhibit, as compared with the census returns of 1860, makes the percentages as follows: horses, 68 per cent.; mules, 70 per cent.; cattle, 65 per cent.; sheep. 80 per cent,; hogs, 56 per cent.

The following is a statement of the census returns:

Table showing the number of live stock in 1860.

States.	Horses.	Mules.	Cattle.	Sheep.	Hogs.
Alabama	127,063	111,687	773,396	370,156	1,748,321
Arkansas	140,198	57,358	567,799	202,753	1,171,630
Florida	13,446	10,910	388,060	30,158	271,742
Georgia	130,771	101,069	1,005,882	512,618	2,036,116
Louisiana	78,703	91,762	516,807	181,253	634,525
Mississippi	117,571	110,723	729,909	352,632	1,532,768
North Carolina	150,661	51,388	763,810	546,749	1,883,214
South Carolina	81,125	56,456	506,776	233,509	965,779
Tennessee	290,882	126,345	764,730	773,317	2,347,321
Texas	325,698	63,334	3,535,768	753,363	1,371,532
Virginia	287,579	41,015	1,044,467	1,043,269	1,599,919
Total	1,743,697	822,047	10,597,404	4,999,777	15,562,867

Table showing the condition of the crops on the first day of August, 1866.

States.	Quantity of winter wheat harvested compared with 1865.	Quantity of spring wheat harvested compared with 1865.	Total quantity harvested, taking winter and spring wheat together, compared with 1865.	Quantity of rye harvested compared with 1865.	Quantity of barley harvested compared with 1865.	Average condition of oats.	Average condition of corn.	Average condition of potatoes.	Average condition of sorghum.	Average condition of pastures.
Maine	10½	11	11	11	10⅜	11⅛	10⅛	10½	.....	10⅙
New Hampshire	10¼	10⅝	10⅛	11⅗	10⅜	10⅝	10⅛	10⅜	.....	9⅝
Vermont	8⅓	12⅓	11	10⅗	11⅕	12⅙	10⅜	10⅘	.....	11⅝
Massachusetts	9⅖	10⅛	10⅕	9½	10½	11	11⅛	10½	10	9½
Rhode Island	10	10	10	10⅛	11⅛	10⅛	11	11	.....	10
Connecticut	8⅜	10⅜	10⅛	9¼	10	10	11	10¼	9	11
New York	9⅐	10⅛	10	10¼	10⅜	11⅐	10⅑	10½	9⅖	10⅘
New Jersey	11	10⅗	10¾	11½	9⅖	11	10	9⅜	9½	8⅑
Pennsylvania	9⅛	10	9⅛	10	10	11⅖	10⅜	10⅜	10	9⅖
Delaware	12⅜	12	12⅜	10⅜	12	12⅛	12	11	11⅜	10⅜
Maryland	10 1/10	.....	7⅜	9⅖	10	12	12	11	10⅖	10
Virginia	3⅙	.....	3⅛	5⅜	.....	13	9½	10⅜	9¼	8½
North Carolina	5¼	7	5¾	7⅜	7¼	10⅜	7⅛	10⅜	7⅜	8⅖
South Carolina	6	3¾	6¼	6⅝	2	7⅜	4¾	6½	2⅖	8
Georgia	5	.....	5⅙	7⅑	8	8⅛	6⅜	9	7⅛	9¼
Florida	.....	.....	.....	6	.....	8½	5¼	6⅛	.....	15
Alabama	5⅔	.....	5	7⅜	8½	7¼	4⅜	8⅜	6⅘	10⅐
Mississippi	4	6½	4	4½	5⅜	3⅜	4⅗	8⅚	6	14⅖
Louisiana	1	1	1	5½	.....	5½	4⅜	7⅙	.....	13⅗
Texas	13⅓	9⅕	15⅝	8⅛	7¼	9¼	9⅓	6½	16⅐	13⅖
Arkansas	5½	7⅔	5⅜	4⅗	10	7⅜	6⅜	10	35⅜	12½
Tennessee	6⅛	6¼	6	9	7	12⅖	11⅙	12⅘	10⅛	12
West Virginia	4⅜	9⅘	4½	9	11	12⅖	11¼	12⅖	10⅜	10⅐
Kentucky	8	10⅖	7⅜	8⅜	8⅖	11⅘	11⅜	12⅐	10	10½
Missouri	13⅘	11⅓	13¼	10⅜	10⅖	14⅙	11⅛	11⅘	9	11
Illinois	8⅖	11½	10⅓	10	10½	11⅛	10⅛	9⅜	9⅛	10⅛
Indiana	7⅜	13	7⅛	9	9	11⅘	11⅛	10⅖	9⅖	10⅜
Ohio	6	10⅕	6⅖	8⅜	9⅜	11⅜	11¼	12	10⅙	11
Michigan	9	10⅗	9⅛	10	10⅘	11⅛	10¼	10	9¾	10⅜
Wisconsin	6⅚	12	11⅙	9⅘	9⅜	10	9¾	9½	9	10⅜
Minnesota	11⅕	11⅖	12	10½	9⅕	10½	9⅜	9⅜	10	11⅘
Iowa	8⅘	12⅘	12	10	10¼	11⅘	9⅜	9¾	9½	11
Kansas	14⅕	13	13⅓	11⅓	11⅜	13⅜	11⅓	11⅛	10	11⅓
Nebraska Territory	9⅙	14 3/10	13⅓	13⅛	13⅓	12⅖	10	10⅕	10⅓	11⅛
Utah Territory	10	11½	11⅛	10¼	12	12⅕	9⅜	10	8⅓	12

The returns above, so far as relates to the southern States not heretofore represented, are made in comparison with 1860, instead of 1865. This fact should be kept in view.

Table showing the condition of the crops, &c.—Continued.

States.	Average condition of flax.	Quantity of timothy harvested compared with 1865.	Average condition of timothy when harvested.	Quantity of clover harvested compared with 1865.	Average condition of clover when harvested.	Quantity of hay of all kinds compared with 1865.	Acreage of tobacco planted compared with 1865.	Average condition of tobacco.	Quantity of wool sheared compared with 1865.	Number of lambs this spring compared with 1865.
Maine	10 1/7	7 1/2	10 3/8	5 1/2	10 1/2	6 3/4	10	9 1/3	11	11
New Hampshire	.....	7 3/8	9 1/6	7 1/6	9 1/2	7 5/7	.....	.....	11 5/7	10 6/7
Vermont	10	8 3/8	10 1/6	8 3/8	10 1/6	9 1/7	9 1/2	9 3/8	10 1/7	10 3/7
Massachusetts	12	8	10	7 7/8	9 7/9	7 3/8	8	9 1/2	10 2/9	10 3/9
Rhode Island	.....	8 1/2	10	7	10	8	8	8	10 1/3	10 1/3
Connecticut	10	9 1/4	9 3/4	7 3/4	9 1/2	9	9 1/3	8 3/8	10	10
New York	10	9 1/5	10	9 3/7	10	9 5/7	7 5/8	9 1/3	10 5/9	10 1/8
New Jersey	10	8 1/9	10 1/2	8 1/9	10 1/2	8	8 1/4	8	10 1/7	10
Pennsylvania	10	8	10 1/8	7 1/7	10	7 7/9	8	9 1/8	10 3/5	10 1/2
Delaware	9	9 1/8	9 1/3	9	10	9 1/8	10	10	11	10
Maryland	10 3/3	8 3/8	10	8	10 1/9	8 3/10	10 3/8	11	10 5/9	10 5/9
Virginia	9 3/8	6 3/5	9 3/8	6	9 1/4	7	5 5/6	8 3/4	8	7 1/2
North Carolina	8	8	9 3/4	7 3/1	9 5/6	10	10 1/4	9 3/8	8	7 3/4
South Carolina	.....	.....	.....	1	.....	4 1/3	6 1/2	5 1/2	10	9
Georgia	.....	2 1/2	.....	2 1/2	6 1/4	6	7 1/3	7	8	8
Florida	.....	.....	.....	.....	.....	10	10	10	10	10
Alabama	.....	10	9	8 1/2	9 1/2	11 1/4	10	9	9 1/2	9
Mississippi	10	.....	.....	.....	.....	6 3/5	8	8 1/6	8 3/5	7 1/3
Louisiana	.....	.....	.....	.....	.....	3	11	7 1/2	5 3/4	5 3/5
Texas	.....	.....	.....	.....	.....	11 1/3	4 3/8	10 3/8	10 1/2	11
Arkansas	.....	10	10	10	10	7 3/8	15 3/8	10 3/4	5 5/8	5 5/8
Tennessee	11	8 3/3	9 3/8	8 3/3	9 3/3	9 3/5	9	9 1/5	8	8 3/8
West Virginia	10	8 5/6	9 1/2	9	9 3/5	11 1/3	10 1/4	10 3/3	11	11
Kentucky	10	9	9 1/4	9 1/3	9 1/2	9 1/5	11	10 1/3	10 1/2	10 1/3
Missouri	10	12 1/3	12 1/2	10 1/4	11 3/8	12 1/2	10	10 1/3	11 1/4	11 1/7
Illinois	10	9 1/3	10 5/6	9 5/9	10 1/2	9 3/7	9	10	11 3/8	11 1/4
Indiana	10 1/2	8 1/4	10 1/9	8 1/3	10	8 3/5	8 4/5	10	11	10 1/2
Ohio	10 1/2	9	10 1/2	7 7/9	10 1/4	9	9 1/5	10 1/5	10 7/8	10 3/9
Michigan	9 3/3	10	10 1/4	8 3/4	9 7/8	9 7/8	9 1/3	9 3/4	11	10 1/3
Wisconsin	10 1/6	10 1/2	10 1/2	8 5/6	10 1/2	10 5/6	10	9 1/3	12 1/5	11 3/3
Minnesota	11	12	11 1/2	10 1/3	10 5/6	12 3/4	9 3/4	9 1/2	12 3/3	12 1/9
Iowa	10 3/5	11 1/3	11 1/3	10	10 5/6	12	9 7/3	9 5/6	12	11 3/3
Kansas	10	11 2/9	11 2/5	11 6/7	12	10 1/4	9 1/3	10	13	14
Nebraska Territory	10	10	10	10	10	10 3/4	11 1/6	10 1/4	12 1/3	12 7/9
Utah Territory	10 1/4	10 3/4	11 1/4	9 1/2	9 1/2	12	9	9 1/3	10	10 5/6

Table showing the condition of the crops, &c.—Continued.

States.	COTTON.				SUGAR CANE.		FARM STOCK OF SOUTHERN STATES.				
	Acreage planted compared with 1859.	Average condition of cotton.	Proportion of hands to acreage compared with 1859.	Productiveness of labor compared with 1859.	Acreage compared with 1859.	Average condition of crop.	Number of horses compared with 1860.	Number of mules compared with 1860.	Number of cattle compared with 1860.	Number of sheep compared with 1860.	Number of hogs compared with 1860.
Alabama	6¾	5	10⅛	5½	12½	12½	6½	6	5⅘	8⅓	5⅕
Arkansas	7	8	10½	8	------	------	5⅘	6⅘	4⅛	4⅝	2⅘
Florida	5⅛	5½	6⅛	4⅛	6	8⅛	5⅝	6⅛	6⅝	2	4
Georgia	7	5⅜	8⅛	5⅛	9½	9	5½	6	5⅘	7½	7
Louisiana	6⅐	7⅐	13	6	3	7⅛	4⅕	5⅚	4⅖	5	4⅛
Mississippi	5⅛	5⅛	8⅕	5⅜	7¾	8⅛	5¾	5¾	5½	8	5⅓
North Carolina	27¾	8⅕	8½	7	12½	6	6⅜	6⅜	6½	7⅛	6¾
South Carolina	6	5⅛	9	5	1	7	6	6⅜	6¼	11⅝	5
Tennessee	44⅕	9½	8	9½	12	9⅜	4⅞	5½	5	6⅐	4⅜
Texas	9	9⅛	11	7	3	5	9	9½	8⅘	12	8¾
Virginia	63⅛	12	10	72	13	11⅜	6	7	5⅕	7⅛	6
Missouri	14	9⅜	9	10	10 1/10	10 1/10	------	------	------	------	----
Kentucky	11⅜	10⅕	10	10	9	12½	------	------	------	------	----
Kansas	16⅛	7	16	17½	------	------	------	------	------	------	----
Illinois	11⅜	9½	11⅜	14	------	------	------	------	------	------	----

CROP RETURNS FOR SEPTEMBER.

The schedules for returns bearing date September 1, to which responses have been full and general, embraced mainly items concerning the current condition of fall crops, of which decisive information will be given in succeeding returns.

Sorghum.—New Jersey, Indiana, Kansas, Arkansas and Texas, report average prospects; Kentucky, Ohio, Michigan, Minnesota and Iowa, stand very slightly below an average; the southern States vary greatly, from three-tenths in Louisiana and South Carolina, five-tenths in Georgia and Alabama, eight-tenths in Mississippi and North Carolina, to eight and a half in Virginia.

Grapes.—The indications are not favorable for a heavy crop. Ohio, eight-tenths; Michigan, Iowa, Missouri, Indiana, nine to nine and a half tenths. In the south the returns are not full enough to be reliable, and vary from five-tenths to ten-tenths.

Hay.—This crop is short in quantity in the New England States, the middle and central western, from one to three-tenths, but larger than an average in the trans-Mississippi States. The quality is generally a full average or above it.

Stock hogs.—An increase over 1865 is reported in Maryland, Ohio, Indiana, Minnesota, Iowa, Missouri, Kansas, as well as a slight increase in Kentucky; an average in Connecticut, New York, and New Jersey; nearly an average in Illinois and the New England States.

Corn.—Everywhere throughout the north the record is favorable for corn, both as to acreage and condition. In Indiana, only a single county made return of less than 12-tenths; Ohio and Kentucky, 11-tenths; Illinois, 9.4-tenths Michigan, 10.8. In point of condition few States, except in the south. fall below 10-tenths. Virginia, 8.2; North Carolina, 6; South Carolina, 3.5; Georgia, 4.7; Florida, 7; Alabama, 4.7; Mississippi, 4 4; Louisiana, 5; Texas, 9.7; Arkansas, 5.6; Tennessee, 9. The present crop will, undoubtedly, be the largest ever known, amounting to more than a thousand millions of bushels. Apprehensions have been felt that a killing frost might supervene and produce immense damage, as the ripening was everywhere in a backward condition Reports have just been received of an injurious frost in Illinois. If it has escaped essential damage thus far, future frosts can scarcely be expected to do much damage.

Potatoes and "root crops."—"Roots" and tubers are in excessive supply and in excellent condition. Illinois, Missouri, and Delaware, with a few of the southern States, are the only States returning less than an average crop of potatoes.

Gardens.—No item in the list makes so good and uniform a show as this. Only Delaware and Mississippi fall below 10, and Texas and Missouri reach 12.

Hops.—More than an average.

COTTON.—Reference is made to extracts from letters in another place, indicating some of the drawbacks which have beset cotton culture, especially during the present season. The derangement of labor, and the seeding of land to weeds and noxious grasses during the past years of war and waste have necessarily increased the ordinary hindrances to successful culture. But the inducements were worthy of the most daring and persistent attempt. It is too early yet to predict the result of the year's efforts with certainty. Insect enemies may yet affect the result. Our corps of observers is not sufficiently complete to warrant a reliable estimate of the amount of cotton to be expected; but we give the result of their estimates, (each for his own county,) fairly compiled and computed, as a basis of estimates for the several States, to be modified, of course, as more complete information is obtained in the progress of the cotton

harvest. The estimates are in *tenths*, not of an average crop, but of the excessive and never-equalled crop which the census records:

	Tenths.	Pounds.
Alabama	3	296, 986
Arkansas	4	146, 957
Florida	3⅓	21, 717
Georgia	2½	175, 460
Louisiana	3¾	281, 651
Mississippi	2½	300, 626
North Carolina	5	72, 757
South Carolina	2	70, 282
Tennessee	10	296, 464
Texas	4	172, 585
		1, 835, 485

RETURNS FROM PACIFIC STATES AND TERRITORIES.

California.—Returns from this State, so far as received, place the quantity of wheat harvested, compared with 1865, at 11½ tenths; barley, 12 tenths; oats, 11½ tenths; corn, (condition of, on August 1st,) 10 tenths; potatoes, 11½ tenths; sorghum, (little cultivated,) 10 tenths; pasture, 12½ tenths; flax, (little grown,) 10 tenths; timothy, (quantity of, compared with 1865,) 11 tenths; clover, 10 tenths; hay, 12 tenths; wool, 11 tenths; lambs, (number of, compared with 1865,) 11 tenths.

Oregon.—Wheat, (quantity compared with 1865,) 12 tenths; rye, 10 tenths; barley, 12 tenths; oats, 12 tenths; corn, 9 tenths; potatoes, 12 tenths; pasture, (average condition of,) 12 tenths; hay, (quantity compared with 1865,) 16 tenths; wool, 11⅓ tenths. But little flax and sorghum are raised in this State; where grown, their condition is reported good. The wet spring caused an unusual growth of grass and a rich pasturage. The rains delayed the harvest, but gave heavy grain crops.

Nevada.—Wheat, (quantity of, compared with 1865,) 25 tenths; potatoes, above an average crop throughout the State; pasturage, 12 tenths; hay, 9 tenths; fruit, reported very scanty, though in tolerable condition.

Washington Territory.—Returns thus far received show—wheat, 12 tenths; oats, 11 tenths; pasturage, 13 tenths; corn, 11 tenths; potatoes, 12 tenths. But little fruit is raised; strawberries and raspberries show well where mention is made of them. Flax and sorghum are not found in our returns.

Dakota Territory.—From our imperfect returns the root crop will average 14 tenths; wheat, 20 tenths; oats, 12 tenths; hay, quantity and condition superior. Grasshoppers are reported to have made their appearance in Clay county, and it was feared that they would injure the crops in other parts of the Territory.

New Mexico.—The returns, though inadequate, show nearly double the quantity of wheat, compared with last year; corn, 11 tenths; pasture in excellent condition; tobacco and wool up to the average.

Colorado.—Wheat, 11 tenths; oats, 11 tenths; corn, 12 tenths; potatoes, 11 tenths; acreage of root crop, as compared with 1865, 19 tenths; the indications are for an unusual yield; hay, 10 tenths. The season has been unusually favorable for crops of all kinds.

METEOROLOGY.

JULY AND AUGUST, 1866.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and the amount of rain, (in inches and tenths,) for July and August, 1866, at the following places, as given by the observers named. The daily observations were made at 7 o'clock a. m. and 2 and 9 p. m.

States and places.	JULY.						AUGUST.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
MAINE.												
		°		°	°	*In.*		°		°	°	*In.*
Steuben	13	90	19	55	74.6	4.30	3	75	24	48	57.3	4.31
Lee	7, 8, 13	88	19	54	66.7	3.75	13, 14	82	25	48	64.0	0.89
Barnard	12	88	22	57	69.1	5.45	12, 13	76	21, 27	50	61.3	7.11
West Waterville	7, 17	91	19	58	72.2	2.90	12, 13	80	16, 20, 24, 25	54	64.4	4.80
Gardiner	17	89	19	58	66.5	3.01	3, 4, 12	75	24, 25	53	63.3	5.50
Lisbon	17	97	.....	.....	.....	3.30	.....	.....	.....	.....	.....	5.67
Webster	7, 8	90	19	57	71.2	.....	12	78	26	49	62.9	.....
Standish	17	98	19	58	74.3	2.57	.....	.....	.....	.....	.....	.....
Cornish	17	93	23	57	71.6	3.40	2	82	21, 26	50	62.4	5.40
Cornishville	17	96	23	58	73.5	2.14	18	81	23	52	64.5	5.91
NEW HAMPSHIRE.												
Stratford	16	88	20	52	67.2	6.68	2	80	17, 21	43	59.2	5.00
Shelburne	16	96	2	48	.....	.....	12, 28	80	25	42	60.9	.....
North Barnstead	16, 17	96	23	58	73.4	3.54	12	85	23, 24	52	65.0	3.51
Claremont	16	95	1	50	73.0	4.97	2	84	18, 24	50	64.0	5.97
Do	8, 16	92	1	54	71.5	.....	21	90	12	46	62.4	.....
VERMONT.												
Lunenburg	.....	.....	.....	.....	.....	.....	1	88	16, 17, 20	45	60.9	5.00
Craftsbury	16	86	1, 20	54	67.0	5.62	2	78	17, 24	46	57.8	5.55
Randolph	16	98	23	53	71.2	2.81	2	82	17	44	67.2	2.80
Middlebury	16, 17	88	1, 18, 19, 20	58	70.8	5.39	2	78	16, 17	48	61.9	3.17
Brandon	16	96	18	56	72.1	2.07	3	86	17	46	64.9	3.38
Barnet	17	106	22	50	74.4	4.50	2	87	15, 17, 21, 28	54	70.0	3.50
Wilmington	13	94	1	52	72.0	.....	2	85	26	47	61.2	.....
MASSACHUSETTS.												
Kingston	17	102	1	54	74.0	6.75	1, 18	82	25	52	66.0	3.65
Lawrence	16	95	1	58	72.4	4.67	1	78	21, 23	52	62.7	2.41

Table showing the range of the thermometer, &c., for July and August.

States and places.	JULY.						AUGUST.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
MASSACHUSETTS—Continued.		°		°	°	*In.*		°		°	°	*In.*
Topsfield	17	97	19, 23	61	74.9	5.64	1	82	24	52	66.9	3.00
Newbury	17	99	1	58	73.6	.....	1	85	24	50	64.4	.....
North Billerica	16, 17	98	2, 22	60	74.2	.....	17, 18	80	21, 25	50	65.7	.....
New Bedford	16	94	1	59	72.1	1.76	1	78	23	53	65.8	3.48
Worcester	16, 17	94	1, 22	60	73.7	3.78	2	80	23, 24	52	65.0	3 32
Lunenburg	.....	.....	.....	.....	.....	.....	2	83	25	48	64.4	.....
Mendon	16	92	1, 21	58	73.1	4.75	1, 2	81	25	50	64.4	2.50
Amherst	16	94	18	52	72.9	4.02	2	82	24	48	63.5	3.96
Springfield	16, 17	103	1	48	74.1	3.00	1, 2, 18	85	17	44	64.7	2.83
Richmond	17	94	5	54	74.7	2.71	1, 4, 31	80	25	44	63.6	6.02
Williams College	16, 17	91	1	53	69.3	3.70	2	82	25, 26	49	59.8	3.38
RHODE ISLAND.												
Newport	16	90	21, 22	58	71.1	1.81	2	83	24, 25	52	64.9	3.78
CONNECTICUT.												
Pomfret	16, 17	91	21	57	71.5	3.58	2	77	23	50	66.4	3.10
Columbia	17	100	22	60	76.2	.....	18	84	25	50	66.7	.....
Middletown	16, 17	100	1, 27	60	75.7	4.04	2	87	25	53	.....	4.24
Colebrook	15, 16	92	1, 2	56	72.6	.....	2	83	24, 25, 26	50	63.8	.....
Groton	16	92	1	55	77.0	2.30	2	81	23, 25	52	66.4	3.93
NEW YORK.												
Moriches	13, 16	102	1	65	78.6	5.47	8	89	25	56	71.4	6.63
South Hartford	16, 17	97	19	62	76.7	2.46	2	84	16	50	66.6	4.34
Troy	16, 17	96	1, 31	62	75.6	3.85	.....	.....	.....	.....	.....	.....
Germantown	16	102	1	56	77.9	1.10	2	92	26	51	65.7	6.20
Fishkill Landing	17	100	1, 29	60	72.5	3.40	2	85	25	51	71.4	4.75
Garrison's	17	98	1	54	74.0	3.83	1, 2	84	23, 25	53	66.0	5.29
Throg's Neck	17	99	1	60	75.9	.....	2	85	23	51	67.6	.....
Deaf & Dumb Ins'n	.....	.....	.....	.....	.....	.....	5	90	25	53	69.5	4.81
Columbia College	17	99	21	62	79.0	1.67	2	85	24	57	70.5	3.84
Flatbush	13, 17	98	1	63	79.2	3.32	2	96	9, 16, 24	55	69.8	4.38
Newburgh	17	99	1	62	76.8	4.10	2	86	25, 26, 27	54	67.0	5.50
Gouverneur	16, 17	90	1	48	71.7	2.45	3	77	12	40	61.5	5.96
North Hammond	13, 16	92	1	56	72.7	3.21	12	84	16	44	72.3	9.63
South Trenton	17	91	19	52	72.5	5.07	1	80	16	42	59.8	4.49
Oneida	16	90	29	54	70.7	5.78	12	84	16	50	64.7	7.05
Houseville	16	90	1	55	71.4	4.47	1	75	16	44	60.7	4.69
Depauville	17	88	1	57	71.2	3.01	12	80	16	48	61.7	5.30
Oswego	15, 16	88	1	53	70.9	2.33	12	80	23, 25	50	60.3	3.73
Palermo	16	94	1	56	72.0	2.80	12	83	23	45	69.1	4.10
Baldwinsville	15	87	1, 21	50	70.5	.....	12	73	16	48	60.5	.....
Skaneateles	15	93	1	52	70.2	.....	.....	.....	.....	.....	.....	.....
Nichols	13	100	1	54	73.2	.....	8, 18	84	17, 25	46	63.4	.....
Geneva	16	94	1	56	73.8	2.07	12	80	16	51	62.9	3.22
Rochester Univ'y	16	95	1	60	74.3	1.36	3, 12, 18	76	24	48	62.6	4.91
Rochester	16	96	1	59	70.0	1.36	18	78	24	50	63.1	4.91
Little Genesee	14, 15	94	1	50	71.1	1.88	13	86	17	41	57.5	.....
Buffalo	29	87	9	58	73.0	1.47	12	81	25	49	64.8	4.44

Table showing the range of the thermometer, &c., for July and August.

States and places.	JULY.						AUGUST.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
NEW JERSEY.		°		°	°	*In.*		°		°	°	*In.*
Paterson	17	99	1	52	75.0	4.85	1, 2	86	25	52	66.8	6.36
Newark	17	99	1	54	76.1	1.84	1	86	25	49	67.3	5.35
New Brunswick	17	101	11	61	76.7	2.91	1	87	25	53	67.1	7.07
Trenton	17	99	2	64	81.7	4.26	2	86	24	57	72.7	4.80
Burlington	17	97	1, 2, 11	62	75.9	2.90	2	84	25	52	67.6	3.90
Moorestown	16	102	1	61	78.2	2.07	2, 8, 31	85	23	56	70.1	2.73
Mount Holly	17	98	2, 11	62	76.8	.....	2	84	25, 26, 27	54	71.9	.....
Seaville	18	99	1	60	79.4	2.60	.....	.....	.....	.....	.....	.....
Haddonfield	17	102	2	62	78.5	2.26	2	88	24	55	69.9	2.72
Greenwich	17	94	2	62	77.1	2.71	9	83	17	55	69.9	2.81
PENNSYLVANIA.												
Nyces	14	97	1	47	72.4	2.30	31	87	25	40	62.6	3.10
Fallsington	16, 17	98	2	63	77.0	2.80	2	84	26	55	69.0	4.50
Philadelphia	17	100	21	65	80.7	2.51	1, 2	87	24	58	72.5	2.57
Germantown	17	101	1, 21	63	79.1	.....	1, 31	86	17	55	70.0	.....
Moorland	16, 17	96	1, 10, 21	63	75.8	1.90	2	82	24, 25	53	67.3	5.25
Dyberry	16, 17	96	1, 2	46	69.3	.....	7	77	17, 21, 26	41	63.9	.....
Nazareth	16	98	4	60	76.6	.....	31	89	25	49	66.7	.....
North Whitehall	16, 17	95	1, 2, 11	54	75.3	.....	1	85	25, 26, 27	45	66.3	.....
Parkesville	17	101	1, 11	64	79.5	1.44	2	88	27	54	71.3	3.19
Stevensville	16	98	1	55	74.1	3.00	18	83	25	42	63.9	3.02
Reading	.....	.....	.....	.....	.....	.....	3	88	26	49	68.5	.....
Ephrata	16, 17	99	2	59	.....	1.70	31	86	25	50	68.7	3.73
Silver Spring	16	100	1	58	77.6	.....	31	86	25	52	68.0	.....
Mount Joy	7, 16	94	17	58	73.9	1.43	1	85	27	52	68.4	3.70
Harrisburg	16	96	.....	.....	81.6	3.78	1	87	26	55	71.2	2.34
Lewisburg	16, 17	98	23	61	76.5	2.63	2	84	23	50	65.9	4.31
Tioga	16	100	1	54	74.4	4.15	17	86	17, 24	44	64.1	4.25
Pennsville	15, 16	94	1	44	72.4	5.25	31	82	17, 26, 27	42	62.1	5.68
Connellsville	16	92	1	61	74.8	.....	31	82	25	48	64.9	.....
New Castle	16	94	1, 10	55	74.9	.....	31	76	17	44	64.3	.....
Canonsburg	16	95	1	58	74.9	3.71	18, 31	82	17	48	65.9	3.45
MARYLAND.												
Woodlawn	17	97	2	63	75.1	2.90	2	86	23	55	70.1	3.00
Catonsville	16, 17, 18	93	10	60	76.6	.....	2	82	25	51	70.1	3.00
Annapolis	17	97	1, 2	67	79.9	6.06	2	82	25	51	67.5	.....
Frederick	17	96	1, 2	62	76.5	*3.00	2, 9	86	17, 24	54	72.7	3.51
VIRGINIA.												
Wytheville	16	96	1	54	73.7	.....	12	88	.....	.....	.....	.....
WEST VIRGINIA.												
Cabell Court-House	15	91	2	62	76.1	6.70	1	85	27	51	69.2	3.10
Romney	6, 8, 14, 15	98	1	54	73.9	.....	1	94	26	46	65.7	.....
NORTH CAROLINA.												
Statesville	17, 18	96	1	50	73.2	2.23	2	93	6	52	.....	2.00
Wilson	8	101	31	71	82.1	6.64	9	96	24, 25	60	76.0	3.36

Table showing the range of the thermometer, &c., for July and August.

States and places.	JULY.						AUGUST.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
NORTH CAROLINA—Continued.		°		°	°	*In.*		°		°	°	*In.*
Oxford	19	89	3	69	79.3	.....	2, 4, 9	84	24	62	74.7	.....
Raleigh	.....	.....	.....	.....	.....	.....	9	95	21, 24	59	75.0	1.80
GEORGIA.												
Atlanta	18, 19	92	1	50	75.8	1.27	8, 9	94	21, 24, 25, 26, 27	59	73.6	4.05
TEXAS.												
Austin	28, 29	96	14, 15	71	81.3	4.34	1	96	30	68	80.6	7.51
Chapel Hill	28	96	1, 2	70	77.3	2.90	.....	.....	.....	.....	.....	.....
MISSISSIPPI.												
Natchez	18	89	1	60	.....	.....	11	91	25	63	83.6	5.73
Grenada	27	91	1	55	.....	.....	8, 9, 12	92	25	58	.....	.....
ARKANSAS.												
Helena	26	98	2	65	81.6	3.20	8, 12	98	24	60	77.6	5.74
TENNESSEE.												
Clarksville	15	90	1	60	77.4	4.93	12, 13	93	25	51	72.2	0.68
Lookout Mountain	19	102	2	71	83.5	.....	8, 13	102	27	57	77.1	.....
KENTUCKY.												
Louisville	15	93	1	53	77.4	8.37	12	91	24, 26	43	70.4	3.46
Chilesburg	15	94	1	54	.....	9.96	12	90	24	42	.....	2.61
Taylorsville	15	95	1	66	80.4	6.23	.....	.....	.....	.....	.....	.....
OHIO.												
New Lisbon	16	98	1	61	75.6	4.10	13	88	23, 26	48	65.3	3.44
East Fairfield	16	91	1	59	73.4	4.91	6, 31	74	24, 26	50	64.5	5.19
Steubenville	16	92	1	61	78.0	.....	31	79	26, 27	51	68.3	.....
Do	16	95	1	60	79.7	4.00	.....	83	.....	48	68.8	4.55
Milnersville	15, 16	96	10	55	73.8	3.90	.....	.....	.....	.....	.....	.....
East Cleveland	16	95	9	58	74.7	3.53	13	85	17	49	65.4	3.76
Cleveland	.....	.....	.....	.....	.....	.....	3	80	17	49	69.2	.....
Wooster	14, 16	98	12	65	77.1	.....	13	85	22, 26	50	66.7	.....
Gallipolis	.....	.....	.....	.....	.....	.....	3	91	27	47	68.2	2.31
Kelley's Island	16	93	9	64	77.6	2.59	12	85	24	53	69.0	2.29
Westerville	15	94	11	63	77.5	3.53	10, 18, 31	83	22, 25	51	66.5	2.54
Kingston	15	100	9	64	77.6	1.84	30	88	25	50	68.2	2.85
Toledo	16	95	11	61	74.6	4.00	13	81	24	51	65.2	2.44
Marion	16	92	9	64	74.5	5.97	31	82	23, 25, 26	49	64.2	3.31
Kenton	16	97	4	60	78.1	8.63	31	89	24	50	67.7	14.85
Urbana University	15, 16	91	1	63	75.5	4.74	18, 31	82	23, 25, 26	49	65.4	3.57
Hillsborough	16	91	1, 10	61	77.2	5.33	12	80	24	48	66.2	2.87
Ripley	16	100	31	68	85.7	.....	.....	.....	.....	.....	.....	.....
Bethel	15	93	1, 2, 3, 10	62	74.1	3.14	18	85	23	42	62.9	3.00
Cincinnati	16	92	9	66	78.0	6.82	8, 31	83	24	53	69.5	2.75
Do	6	96	1	66	81.7	7.80	.....	.....	.....	.....	.....	.....
Farmers' College	17	95	1	63	76.2	8.63	8	81	24	48	.....	3.63
College Hill	15	96	10, 11	66	78.7	8.50	12	85	24	54	70.0	2.44

Table showing the range of the thermometer, &c., for July and August.

States and places.	JULY.						AUGUST.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
MICHIGAN.		°		°	°	*In.*		°		°	°	*In.*
Monroe	14	94	10	60	75.8	1.51	13	83	25	46	66.4	1.38
State Ag. College	14, 15, 16	90	9, 10	60	73.7	4.19	1	78	25	47	62.6	3.44
Grand Rapids	16	93	9	62	76.0	.....	1, 10, 14	79	24, 25	49	63.9	.....
Litchfield	15	96	30	60	75.0	1.85	1, 13, 14	82	23	44	64.3	2.66
Northport	5	94	8	55	71.1	.....	14, 17	77	22, 24	48	62.0	.....
Holland	15	94	9	50	74.0	2.07	31	83	21	43	62.8	4.80
Ontonagon	11	90	9	50	67.5	.....	16	78	21, 29	48	59.6	.....
Homestead	14	92	8	56	73.5	.....	1	76	22	42	60.8	.....
Kalamazoo	.....	.....	.....	.....	.....	.....	18	94	22, 23, 24, 25	60	74.6	.....
Houghton	.....	.....	.....	.....	.....	.....	16	85	23	48	62.9	2.23
INDIANA.												
Aurora	15	101	10	62	81.5	4.96	11	92	24	50	71.7	2.65
Vevay	14, 15	100	1	67	84.7	6.95	12	96	26	50	75.9	1.47
Richmond	15, 16	91	1	62	75.0	5.64	10	81	23	47	65.0	4.26
Spiceland	15	96	1	63	76.6	9.10	10	85	23	48	66.2	4.60
Muncie	.....	.....	.....	.....	.....	.....	1	85	23, 25	49	67.2	5.10
Madison	15	94	1	66	82.5	6.93	.....	.....	.....	.....	.....	.....
Columbia City	15	99	1	57	76.3	4.32	14	88	24	45	65.9	5.69
Indianapolis	.....	.....	.....	.....	.....	.....	31	88	23	49	69.3	.....
New Harmony	15	95	1	68	82.0	3.11	12	96	25	56	74.1	1.15
ILLINOIS.												
Marengo	3	99	8	58	75.1	5.19	12	86	22	45	64.5	8.59
Riley	15	96	9	57	72.9	4.23	.....	.....	.....	.....	.....	.....
Golconda	15	102	1	57	83.3	3.32	12	100	24	40	77.7	1.68
Aurora	16	96	1, 9	60	76.2	3.21	12	85	24	48	68.2	6.20
Sandwich	14, 16	96	9	61	76.1	3.89	10	86	22	46	64.8	5.18
Ottawa	13	99	18	62	76.0	.....	30	90	24	50	65.1	1.62
Winnebago	13	95	9	59	75.6	5.03	12	83	29	46	65.1	7.52
Wyanet	12	96	9	59	76.3	4.19	12	89	22	52	68.8	5.44
Tiskilwa	12, 13, 14	99	19	58	78.1	.....	12	91	23	48	69.5	.....
Elmira	15	95	1, 9	60	77.1	4.57	12	86	25	48	68.0	3.88
Hennepin	13, 16, 17	95	9	53	.....	.....	.....	.....	.....	.....	.....	.....
Peoria	15	95	9	62	78.2	5.17	12	90	23	50	70.1	3.97
Springfield	15	98	1	62	77.7	.....	12	96	24	51	71.2	.....
Loami	15	97	19	58	78.3	4.23	12	100	25	51	70.6	2.05
Dubois	16	98	3	54	75.4	3.65	12	94	24	38	66.1	0.05
Galesburg	13	93	1	60	75.6	4.28	3, 12	85	23	50	67.5	4.82
Augusta	13, 14, 15, 16, 17, 22, 23, 27	89	9	65	79.3	3.20	12	91	23	50	72.2	3.41
Manchester	16	96	19	60	79.9	4.02	12	101	23	52	72.6	2.89
Mt. Sterling	15	97	19	64	82.0	.....	12	94	22	50	73.0	.....
Andalusia	13, 18	99	1	65	82.9	.....	3, 4	88	22	50	71.1	.....
Rochelle	13, 15	96	9	58	73.0	.....	12	90	23, 24	50	66.5	.....

Table showing the range of the thermometer, &c., for July and August.

States and places.	JULY.						AUGUST.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
WISCONSIN.		°		°	°	*In.*		°		°	°	*In.*
Manitowoc	13, 15	96	9	54	71. 4	2. 58	12	83	24	46	63. 0	3. 82
Milwaukee	13, 16	97	18	50	72. 9	2. 73	1	90	22, 25	46	63. 9	3. 95
Do	13	96	8	55	73. 2	3. 54	12	85	24	49	63. 1	4. 78
Ripon	15	95	9, 19	61	74. 1	.....	10, 14, 17	80	22	47	65. 1	.....
Geneva	13, 14, 17	93	9	58	75. 4	.....	12, 14	82	25	50	65. 0	.....
Delavan	16	98	8, 9	56	74. 7	3. 35	.....	.....	.....	.....	.....	7. 97
Waupacca	13	96	9, 10	60	77. 5	.....	1, 10, 12, 14	80	24	48	65. 6	.....
Weyauwega	14	94	9	58	75. 7	0. 70	14	81	23	48	63. 1	3. 60
Embarrass	13	104	9	54	74. 6	3. 24	2, 26	84	16	46	62. 5	5. 34
Rocky Run	12, 13, 14, 15	92	9	60	78. 8	4. 75	12	84	23	48	61. 5	8. 00
Baraboo	12, 13	96	9	54	76. 0	.....	10	85	21	52	.....	13. 44
Beloit	16	93	1, 10	60	75. 4	5. 53	.....	.....	.....	.....	.....	.....
Plymouth	12, 13	96	8, 9	54	74. 0	4. 60	12	84	22, 23, 24	48	63. 4	4. 90
MINNESOTA.												
Beaver Bay	12, 15	90	6, 8	50	67. 3	3. 94	14	84	21, 24	46	63. 2	2. 10
Afton	12, 13	94	3	59	75. 0	.....	2, 9, 15, 16	82	23	42	64. 7	.....
St. Paul	12	90	8	59	73. 7	2. 30	10	80	23	45	62. 4	4. 73
Minneapolis	13, 15	98	8	63	78. 5	2. 27	2	85	22	46	70. 1	4. 90
Sibley	12	98	8	58	74. 6	2. 29	17	88	23, 24	42	63. 4	16. 20
New Ulm	12, 15	97	2, 6, 17, 18	64	79. 7	3. 05	17	88	22, 23, 24	50	68. 9	6. 34
IOWA.												
Clinton	12, 13	96	1, 2, 10	62	78. 7	6. 20	.....	.....	.....	.....	.....	.....
Lyons	13	94	2, 10	63	77. 8	6. 06	1	88	22	49	68. 2	9. 45
Davenport	12, 13, 15, 17, 21	90	1, 2, 10, 19	64	75. 5	3. 33	3	84	23, 25	52	68. 0	13. 33
Dubuque	13	96	1	61	76. 5	5. 04	14	82	23	50	66. 5	8. 20
Muscatine	13	94	10	59	71. 8	5. 18	.....	.....	.....	.....	.....	.....
Fort Madison	23	96	1	62	80. 2	6. 76	12	95	23, 25	48	71. 0	2. 63
Monticello	13	94	1, 8, 19	62	73. 3	5. 63	17	84	23, 25	50	66. 8	8. 20
Guttenberg	12, 16, 29	94	19	54	73. 6	.....	9, 10, 12, 13, 14	82	22	42	64. 4	.....
Ceres	12	96	1, 2, 4	60	76. 8	.....	9	86	23	50	67. 3	.....
Manchester	12, 13, 16	90	2	58	72. 8	6. 51	14	82	25	38	61. 6	4. 79
Mount Vernon	17	93	9	58	76. 1	.....	3	83	23, 24	49	66. 3	.....
Iowa City	12, 15, 21, 28	94	3	58	77. 1	4. 55	14	88	25	43	68. 8	6. 85
Independence	13	100	2, 8	57	77. 8	7. 30	15	87	24	44	66. 5	13. 60
Do	16	93	2	60	72. 1	.....	7	82	24	48	65. 7	.....
Waterloo	12	94	2, 8	58	86. 7	.....	12	86	24, 25	40	65. 8	.....
Osage	6, 12	96	2, 17, 18, 19	61	78. 1	.....	.....	.....	.....	.....	.....	.....
Iowa Falls	12, 13, 14, 22	92	2	59	74. 3	.....	11	82	24, 25	42	68. 2	6. 91
Des Moines	22	94	2	48	72. 6	.....	6	94	23, 24	49	69. 7	2. 13
Fontenelle	22	94	2	60	77. 2	2. 90	3	94	23	49	70. 2	2. 75
Harris Grove	22	99	9	53	76. 5	3. 00	6	94	24	46	70. 1	1. 30

Table showing the range of the thermometer, &c., for July and August.

States and places.	JULY.						AUGUST.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
MISSOURI.												
		°		°	°	*In.*		°		°	°	*In.*
St. Louis Univer'y.	26, 27	95	9	65	81.8	3.65	12	97	23	58	75.9	3.71
St. Louis	22, 26, 27	97	9	65	81.7	3.68	.....	.....	.....	.....	.....	.....
Allenton	26, 27, 29, 30	95	2	61	75.7	4.93	11	97	24, 25	42	68.9	3.53
Athens	23	103	11	67	82.7	3.69	.....	.....	.....	.....	.....	.....
Canton	26	101	18	64	80.9	5.67	7, 11, 12	100	24	38	72.1	2.13
Harrisonville	18	96	2	62	74.8	7.88	3, 6, 7, 12, 31	92	24	52	73.5	4.00
Easton	23, 25, 27, 28	92	8	62	79.7	4.69	7	93	24	58	75.0	0.80
Union	27	98	1	68	80.6	5.64	12	102	25	50	73.5	1.46
KANSAS.												
Leavenworth	21	98	8	61	77.2	9.31	12	100	24	41	72.2	1.15
Olathe	12	100	8	63	78.6	9.80	12	97	23	51	74.0	.....
Agric. College	24, 26, 27	96	8	64	.....	3.27	.....	.....	.....	.....	.....	.....
Council Grove	27	100	8	60	75.8	3.15	7	102	24	48	75.3	2.05
NEBRASKA.												
Elkhorn	22	102	2	60	78.4	.....	7	101	24	50	72.2	.....
Bellevue	21	99	2	60	79.0	1.52	3	95	23	51	73.2	1.46
Glendale	22	97	2	60	77.8	2.80	6	101	22	45	72.3	3.22
UTAH TERRITORY.												
Great S. Lake City	9, 20	90	7	64	.....	8.73	.....	.....	.....	.....	.....	.....
Wanship	8	94	31	47	71.2	.....	.....	.....	.....	.....	.....	.....
CALIFORNIA.												
San Francisco	10, 12, 26	65	31	51	56.3	0.00	13	71	9, 10	51	56.5	0.00
Sacramento	1	98	5, 8, 11	64	75.9	0.02	15, 16	98	29	60	76.0	0.00
Monterey	18	78	9	52	59.3	0.00	14	75	1, 26	54	61.0	0.00
											193.5	
MONTANA TER'Y.											64.5	
Helena City	20, 23, 28	96	31	66	78.9	0.07	21	96	30, 31	64	77.9	0.20
OREGON.												
Corvalis	3	98	11, 25	50	.....	.....	14	92	4	46	.....	.....

AVERAGES OF JULY AND AUGUST.

Table showing the average temperature and fall of rain (in inches and tenths) for the months of July and August in each of the years named.

States, &c.	JULY.						AUGUST.					
	Averages, 1864.		Averages, 1865.		Averages, 1866.		Averages, 1864.		Averages, 1865.		Averages, 1866.	
	Mean temp.	Mean rain.	Mean temp.	Mean rain.	Mean temp.	Mean rain.	Mean temp.	Mean rain.	Mean temp.	Mean rain.	Mean temp.	Mean rain.
	Deg.	*In.*	*Deg.*	*In.*	*Deg.*	*In.*	*Deg.*	*In.*	*Deg.*	*In.*	*Deg.*	*In.*
Maine	68.3	1.02	66.9	4.45	71.1	3.42	66.8	5.12	66.8	2.51	62.5	4.95
New Hampshire	69.7	1.80	66.4	3.96	71.3	5.06	68.9	5.85	66.3	1.89	62.3	4.83
Vermont	69.0	2.22	64.4	4.79	71.3	4.08	67.2	4.85	67.1	2.08	63.4	3.90
Massachusetts	70.0	1.43	69.5	3.50	73.3	4.08	69.6	4.72	68.6	1.79	64.4	3.46
Connecticut	72.1	1.44	71.3	5.19	74.6	3.31	72.0	3.19	69.9	1.41	65.8	3.76
New York	73.5	2.28	69.5	3.70	73.7	3.02	72.4	6.15	68.6	1.44	65.2	5.10
New Jersey	73.0	2.83	73.9	4.30	72.5	2.93	75.0	2.61	71.3	3.60	69.3	4.47
Pennsylvania	75.2	3.52	72.1	4.77	75.8	2.82	74.0	4.80	69.6	3.24	66.9	3.78
Delaware	76.8	4.00	73.7	5.70	.....	.....	79.6	3.30	73.1	3.60	.....	.....
Maryland	76.1	1.24	75.7	6.47	77.0	3.99	78.3	3.61	73.9	3.04	69.6	3.20
West Virginia	.....	.....	75.4	5.70	75.0	6.70	.....	.....	70.1	2.10	67.5	3.10
Mississippi	.....	.....	82.7	2.33	.....	.....	.....	.....	80.6	1.91	83.6	5.73
Tennessee	.....	.....	75.7	5.14	80.5	4.93	.....	.....	74.3	4.92	74.7	0.68
Kentucky	79.6	2.13	75.4	5.99	78.9	8.19	75.9	5.63	73.6	3.35	70.4	3.04
Ohio	76.1	2.34	72.1	5.50	77.1	5.11	73.6	4.94	70.6	2.98	66.9	3.87
Michigan	73.7	1.37	66.2	4.43	73.3	2.41	71.1	1.83	66.8	3.99	63.0	2.90
Indiana	77.8	1.31	72.5	6.75	77.8	5.86	74.4	4.45	71.5	4.90	69.4	3.56
Illinois	76.7	4.89	69.6	5.93	77.5	4.16	73.3	1.72	71.6	4.88	69.1	4.09
Wisconsin	72.7	5.07	65.9	5.31	74.9	3.45	70.6	2.01	67.4	4.70	63.6	6.20
Minnesota	73.3	4.01	68.5	4.13	74.8	2.77	70.7	2.09	68.5	6.17	65.5	6.85
Iowa	75.5	4.59	68.6	5.74	71.3	5.21	72.1	3.60	70.9	4.40	67.2	7.10
Missouri	80.2	3.71	74.2	8.55	79.7	4.98	74.1	3.11	75.7	3.64	73.2	2.61
Kansas	83.6	3.55	76.0	7.66	77.2	6.38	80.2	2.14	74.4	9.07	73.8	1.61
Nebraska Territory	77.5	0.74	73.1	5.13	78.4	2.16	74.6	1.48	73.5	1.50	72.6	2.34
California	.....	.....	67.8	0.05	63.5	0.01	.....	.....	64.9	0.05	64.5	0.00

NOTES OF THE WEATHER

FROM THE SMITHSONIAN INSTITUTION.

JULY, 1866.

Cornish, Maine.—July 25.—Several small thunder-showers north in the afternoon.

Steuben, Maine.—July 25.—Thunder to the north at 2 p. m.

Lee, Maine.—July 25.—Thunder at 1 p. m. northeast, and at 5 p. m. east rain from 6.30 p. m. to 10 p. m.

Williamsburg, Maine.—July 25.—Hard thunder-shower from 1.30 to 2 p. m., from 3 to 5 p. m., and in the night.

Gardiner, Maine.—The mean temperature of the month is three-tenths of a degree above the average of thirty years; rain three-tenths of an inch less than the average.

North Barnstead, New Hampshire.—July 25.—Thunder from 11 a. m. to 1 p. m.

Claremont, New Hampshire.—July 25.—Thunder and lightning at 9 a. m., and soon afterwards a heavy shower, lasting three-quarters of an hour; several trees struck by lightning; it continued showery during the day.

Stratford, New Hampshire.—The month of July has been warm and wet, with more lightning and thunder than we generally have in a whole summer.

Claremont, New Hampshire.—From about the 10th to the 16th the dew was almost imperceptible. Thunder-showers were unusually frequent during the month.

Barnet, Vermont.—The rain in July has been from showers, and none from a rain-storm. The wind was in the northwest the most of the time, and there has been more thunder and lightning than usual.

Randolph, Vermont.—July 25.—Thunder-showers commenced at 9 a. m: distant thunder at intervals all day. There has been an unusual amount of thunder during the month.

New Bedford, Massachusetts.—July 25.—Shower from 7.30 to 9 a. m A thunder squall and heavy rain at 4. p. m.; showers of hail, damaging crops a few miles north and east of this place.

Mendon, Massachusetts.—July 25.—Thunder-shower at 5 p. m.

Williamstown, Massachusetts.—July 25.—Tornado a few miles south; rain, wind and hail.

Kingston, Massachusetts.—July 25.—Thunder-shower at 1 p. m., moving from west; another at 2½ p. m., very heavy. Two inches of rain fell to-day. A few hailstones as large as peas fell at 3 p. m.

Middletown, Connecticut.—July 25.—Thunder-shower beginning at 12 m., with some hail. A few rods only east of this observatory much more hail fell, and at a distance of half a mile the quantity was very great, and much damage was done to tender vegetables, especially tobacco.

Pomfret, Connecticut.—This July has been the warmest in fourteen years, except 1854, which was only two-thirds of a degree warmer. Nearly all the rain of the month was accompanied with thunder, and considerable damage was done by lightning.

Moriches, New York.—July 25.—Thunder-showers through the afternoon; at 8½ p. m. it seemed to settle down to a steady rain. At "Baiting Hollow," about twelve miles northeast of here, near the Sound, a remarkable hail-storm occurred among some of the numerous showers of the 25th or 28th. The area

was about 2½ miles long by a mile in width, the hail being eight to nine inches deep at the maximum. Sheep were killed, grain crops destroyed, glass broken, &c. The observer has been here over eleven years, and has known no hail-storm properly so called. This July was remarkable for the great heat of the 11th, 17th, and for the numerous thunder-showers of the latter part.

Palermo, New York.—July 18.—The last three days were the three hottest days known in this region in one season for many years. This July has been the warmest in twelve years except 1854.

Depauville, New York.—July 25.—At 6.30 a. m. a thunder-storm, with zig-zag lightning, moved from northwest to southeast. Along the centre of this storm there was a fall of hail enough to whiten the ground; some of the stones were as large as walnuts, with a few pieces of ice over an inch thick. At 8.10 a. m. another hail-storm passed six miles south from here, much more severe.

North Hammond, New York.—July 25.—Rain from 7.50 to 9.45 a. m. Thunder at intervals through the day.

Skaneateles, New York.—Seldom has such a July been known; all crops, except fruit, are prosperous.

Rochester, New York.—The first half of this July was the hottest in thirty years, and the month has only one hotter, viz, in 1855. The temperature at 2 p. m. on the 15th was 93°; on the 16th, 95°, and on the 17th 93°. Not more than three successive days, with the maximum temperature of each above 90°, have occurred in thirty years past.

Geneva, New York.—The average temperature of July was more than three degrees and a half above the general average for the last fifteen years. The 16th was the hottest day recorded during that period, the time for which these records have been kept.

Newark, New Jersey.—The mean temperature of the month was higher than that of any July during the last twenty-three years, the period for which these records have been kept; but its maximum temperature was exceeded in 1843 and 1849. Only one July, that of 1843, exceeded it in the number of days on which the mercury rose above 90°, in which month there were nine, while this year there were only eight. In 1845 there were seven days in succession on which the mercury rose above 90°, and in both 1854 and 1856 there were five such days, but this year there were only four. There was no rain-storm during the month, and only one entirely cloudy day.

Horsham, Pennsylvania.—July 25.—Heavy thunder-storm, with considerable hail, about 5 p. m.; some of the hailstones measured over four inches in circumference.

Harrisburg, Pennsylvania.—July 25.—Heavy storm of wind with hail at 7 p. m.

Philadelphia, Pennsylvania.—July 17.—The warmest day since the observer has been keeping a record, now sixteen years. The mean temperature was 92.33°. The nearest approach to this was the 21st of July, 1854, of which the mean temperature was 91.30°. The highest temperature on this day was 101° at 3 p. m.; on the 21st of July, 1854, it was 100½°. 25th, a very slight rain from 7 to 7½ p. m. The mean temperature of the month was 2¾° above the average for July.

Pennsville, Pennsylvania.—July has been mostly a pleasant month, favorable to harvesting, and also for the growing crops.

Lewisburg, Pennsylvania.—July 17.—The mean temperature of July is the highest since 1856.

Byberry, Pennsylvania.—July 25.—Heavy shower in the evening from west and northwest, with some hail, thunder and lightning.

Nazareth, Pennsylvania.—July 25.—Thunder-gust northwest at 5 p. m.

Ephrata, Pennsylvania.—July 25.—A thunder-storm passed over this place at 5.25 p. m. A hail-storm set in at 5.35. Hail covered the ground in most

places, and were from 1 to 1½ inches in diameter; also pellets of ice fell from two to three inches in length and an inch in thickness. The hail-storm continued about fifteen minutes.

Bethlehem, Pennsylvania.—July 25.—At a quarter before 7 p. m., Dr. C. M. Wetherill witnessed the formation of a tornado, apparently about a mile to the southeast of Bethlehem. It did not produce any effect at or near Bethlehem; its action was confined to the heavens, and it appeared to pass off to the southward.—*Correspondence.*

Woodlawn, Maryland.—July 25.—After 6 p. m. a very dark cloud passed from northwest to northeast, and then returned directly overhead. About 6.40 occasional balls of hail began to fall, in size and form similar to gum drops, but ceased, and rain commenced, at first moderately, but soon increasing to a heavy rain, when the hail again fell, first in round balls like rifle-bullets, then increasing in quantity and in size to that of hulled walnuts, until it nearly covered the ground, many of them over an inch in diameter, and one picked up half an hour after the storm measured 1⅜ inches across.

Havre de Grace, Maryland.—July 25.—A few minutes after 7 p. m., ten spans of the great bridge building here by the Philadelphia, Wilmington, and Baltimore railroad company were lifted from the stone piers by a tornado and thrown into the river.—*Newspapers.*

Frederick, Maryland.—July 25.—At 8½ p. m. heavy cloud southwest; constant and very vivid yellow lightning. At fifteen minutes after 9 it rained in torrents. 31st, this is said to be the hottest summer known here for forty years.

Washington, District of Columbia.—July 25.—Slight shower from 5.10 to 5.30 p. m. At 8 p. m., and later, a most beautiful and remarkable display of forked, zigzag, and diffuse lightning at the north and northeast. Very heavy rain after 9 p. m., with large hail.

Wytheville, Virginia.—The middle of July was remarkable for a continued extraordinary hot spell.

Clarksville, Kentucky.—July 25.—About 1 p. m. an extensive storm cloud was observed to the north passing eastward; at 2 p. m., wind in fresh variable squalls from northeast.

Kelley's Island, Ohio.—The temperature of the month has been 5.17° warmer than the mean of July for seven years preceding the present, and 4.53° warmer than the mean of eight years including the present; also 1.40° above the warmest July in eight years, which was in 1864.

Cleveland, Ohio.—July 16.—To-day is the hottest that it has been here in eleven years.

College Hill, Ohio.—The month of July has been unusually wet; on the 28th the rain was the most severe known here for several years.

Bethel, Ohio.—July 15.—A remarkably hot day, the hottest for some years.

Northport, Michigan.—July 15.—The day has been oppressively warm; in the sun almost unendurable. 31st, red squirrels continue as numerous and tame as last month; they have not been plenty formerly. Grasshoppers have been very abundant and destructive this season; they have now nearly all disappeared. The observer sowed about three acres of buckwheat on the east side of a piece of meadow. The grasshoppers began to take the buckwheat on the west side about forty rods long. They took everything clean about two-thirds of the width of the piece, then stopped, leaving a straight line except some slight indentations. Pigeons have also been extremely numerous; they are now disappearing.

Litchfield, Michigan.—July 16.—Much damage was done this afternoon to property at Jonesville, seven miles southeast of here, by a heavy wind and rain; at this place there was scarcely a sprinkle and no wind.

Richmond, Indiana.—The mean temperature of July is the highest since 1856, and 3.77° above the average of the last fourteen years, while the maxi-

mum was only 91°. The depth of rain was 1.44 inch above the average of the same period. The month has rarely been excelled in this country for a fine growing season.

Spiceland, Indiana.—July 28.—Very heavy rain about the middle of last night; nearly four inches fell; it seems to have been confined to a small portion of country.

Dubois, Illinois.—July 31.—Excessive drought; only a tenth of an inch of rain has fallen since the 9th of the month.

Aurora, Illinois.—The drought and the heat have been unfavorable to fruit.

Riley, Illinois.—During the month there has been an unusual amount of extremely hot weather; the mean temperature has been 1.7° above the mean of twelve years. Only 1856 and 1858 were as high. The amount of rain was 1.18 inch below the mean of the same time, yet it has been a growing month, surpassing any in the recollection of any person giving an opinion.

Weyauwega, Wisconsin.—July 31.—During the month there has been considerable very warm weather; many feared that the drought which terminated on the 17th would destroy crops of all kinds, but the rain which fell at that time saved most of them, though badly injured.

Embarrass, Wisconsin.—July 31.—The thermometer has been higher this month than the observer ever saw it before. Crops are coming forward fast and never looked better; have had plenty of rain in seasonable showers.

Plymouth, Wisconsin.—July 21.—A heavy thunder-storm from $2\frac{1}{2}$ to $4\frac{3}{4}$ p. m.; hail fell for over a quarter of an hour, and destroyed everything on the fields and in the gardens, and did great damage to the fruit trees. The hail-storm extended over six miles in length and from one and a half to two miles wide in the direction from northwest to southeast. The stones, which were all in the shape of stars with long sharp points, varied in size from half an inch to about three inches in diameter, more flat than round, and were found twenty-four hours afterwards in sheltered places. Many birds were found killed. 31st.—The mean temperature of the month was four degrees higher than the average of five years.

Manitowoc, Wisconsin.—This July has been the warmest month in fifteen years.

Saint Paul, Minnesota.—The mean temperature of the month was higher than that of any July for the last eight years.

Ceres, Iowa.—July 22.—The heaviest rain fell to-day at 6 a. m. that has been known here since fifteen years ago.

Fort Madison, Iowa.—July 23.—Three inches and two-tenths of rain fell to-day, which is more than on any other one day since the observer began keeping a record in 1848.

Des Moines, Iowa.—July has been remarkably warm and dry, with scarcely any thunder or lightning.

Clinton, Iowa.—July has been very warm and rather wet.

Guttenberg, Iowa.—July 23.—Violent rain, with loud thunder, from 8 p. m. yesterday to 4 a. m. to-day. It was the heaviest rain ever seen by the old settlers here. Fences were swept away which stood for fifteen years where the observer never saw water before. The bridge over a creek on his farm, twelve feet above the level of the creek, was swept away, and the water rose four feet over the bridge.

Leavenworth, Kansas.—The mean temperature of the month was 3.6° below the average of five years; the amount of rain was five inches more than the average of the same period.

Elkhorn City, Nebraska.—July has been the hottest observed, except in 1860, (the season of great drought,) and has also been very dry, although there have been some showers, varying in localities.

Bellevue, Nebraska.—This month has been the warmest for many years, and the Missouri has been unusually high.

Colorado City, Colorado Territory.—July 31.—Ground very wet, sufficiently so to last small grain till harvested.

Helena City, Montana Territory.—July 13.—At 4 p. m. a thunder-storm came up in the south west, and for a few minutes hail stones a quarter of an inch in diameter fell most profusely.

Great Salt Lake City, Utah Territory.—July 31.—The prospect for an abundance of everything in the line of agriculture was never more apparent. The timely rains, which are something new to this region, give new life to the desert.

AUGUST, 1866.

Gardiner, Maine.—This month has been remarkable for its low temperature, being 4.01° less than the average of thirty years, and half a degree colder than any on record. The coldest August previously was that of 1837, the mean temperature of which was 63.43°. The extreme heat (76°) is much less than that of any other year. The amount of rain was 1.6 inch more than the average of the month.

Cornish, Maine.—The mean temperature of the month was three-tenths of a degree higher than the average for the last thirty-five years.

West Waterville, Maine.—More rain has fallen this month than in any other August for six years, and the mean temperature has been lower.

Stratford, New Hampshire.—August has been cold, cloudy, and wet. On the morning of the 17th there was a little frost in low places, but no damage was done.

Claremont, New Hampshire.—Crops are two weeks later than last year at this time.

Craftsbury, Vermont.—This month has been the coldest August since observations have been taken at this place. The mean temperature for the last twelve years was 62.82°, and in no year during that time lower than 61°.

Richmond, Massachusetts.—August has been an unusually cool month, with much lowering weather. Slight frosts are said to have been seen in low lands on the mornings of the 24th and 25th.

Pomfret, Connecticut.—There were no hot days in August; the month seemed to be cold, yet the average temperature was equal to the mean of years.

South Hartford, New York.—The mean temperature of August was about 3-4 degrees below that of previous years. On the morning of the 17th a very slight frost was noticed in a low swampy exposure.

Depeuville, New York.—This has been an unusually wet, cloudy, and cool August. There was hardly a day when it did not rain or a storm was not passing in sight. Two or three mornings the thermometer fell to 46° at sunrise, but there has been no frost.

North Hammond, New York.—August has been uncommonly wet, rain having fallen on nineteen days out of thirty-one. The ground is too wet to move about on; a great amount of harvesting remains undone.

Nichols, New York.—This has been decidedly the coldest and wettest August in a number of years. On a number of mornings the mercury has been below 44° at five o'clock. On the 17th at 5.15 a. m. it was as low as 37°and the tops of all fences and boards were perfectly white with frost, but no damage was done. There was a frost earlier in the month that showed on a few garden vines.

Little Genesee, New York.—August 31.—There has not been a good day during the month to ripen corn, the most forward is scarcely fit to boil for green. There has been no frost just here, but in some towns in this (Allegany county)

region, including a part of Potter county, Pennsylvania, corn, buckwheat, and potatoes are badly killed.

Geneva, New York.—The mean temperature of August was nearly six degrees below the general average for the month. There has been no frost. The rains have been unusually frequent, but the total amount of rainfall was less than the average for the last fifteen years.

Rochester, New York.—The coldest August before this since Dr. Dewey's records began, was in 1844, when the mean temperature was 65.53° or nearly three degrees warmer than the month just closed.

Greenwich, New Jersey.—August has been unusually cool, but no frost has been observed or heard of in this neighborhood.

Newark, New Jersey.—The average temperature of August for the last twenty-three years was 70.99, that of the last month was 3.69° lower. The amount of rain was nearly three-fourths of an inch more than the average quantity for the month.

Connelsville, Pennsylvania.—August 16.—Temperature at sunrise 41°; frost within one mile of this place.

Stevensville, Pennsylvania.—August 17.—Thermometer 37° at 5 a. m. Hard frost on the hills around here; a heavy fog kept it off from the valley.

Dyberry, Pennsylvania.—August 18.—Very slight frost this morning. 25th, a trifle of ice in the morning.

Newcastle, Pennsylvania.—August 17.—Heavy white frost this morning.

Lewisburg, Pennsylvania.—The mean temperature of the month is lower than that of any August since the record begun, which was in 1856.

Woodlawn, Maryland,—August 17.—A light hoar-frost.

Grenada, Mississippi.—At sunrise on the 25th the temperature was 58°, which is lower than it has been in August for ten years, which is as far back as the record has been kept.

Chilesburg, Kentucky.—August 24.—There was frost in some localities, but none here, owing to a fog that arose from the spring and spring branch extending so as to prevent it.

Steubenville, Ohio.—This has been the coldest August since 1836.

Urbana, Ohio.—The mean temperature of the month was 6.10° lower than the average of August for the past fourteen years. On the 24th there was light frost in the neighborhood, and on the 26th a very light frost on the observer's place, but no damaged tender plants.

Bethel, Ohio.—August 8.—A violent thunder-storm came from the northwest at 9 p. m. The wind blew down trees and some houses; there was more lightning than for years.

Litchfield, Michigan.—August 23.—A heavy frost at 4.30 a. m.; no injury to crops on upland; buckwheat injured in the valleys on clay and muck soils. Springs are lower, the first settlers say, than they have been known for twenty-five years.

Muncie, Indiana.—There were light frosts on the mornings of the 26th and 27th, but not enough to do any damage to vegetation.

Sandwich, Illinois.—August 25 and 26.—Light frosts. No damage done.

Rochelle, Illinois.—August 3.—Severe hail storm at 8.20 p. m. Some of the stones measured an inch and a half through the largest diameter, and a little over half an inch through the shortest diameter. In shape they were oblate spheroids. A number were cut open to count the rings of different density. In the largest there were four circles of the more compact ice, counting the central dot and the outer surface.

[A newspaper account of this hail storm in Carroll, Ogle, DeKalb, and Kane counties represents it as very destructive to animals, standing crops, and buildings.]

Soami, Illinois.—August 23.—A light frost reported this morning six or eight miles east of this place, but none known nearer.

Wyaconda Prairie, Missouri.—August 24.—Frost. No damage done.

Baraboo, Wisconsin.—August 22 and 23.—A slight white frost, but it did no injury worth mentioning. In low places corn and vines were slightly cut.

Plymouth, Wisconsin.—August was unusually damp, cool, and cloudy. The mean temperature was three degrees below the average of the last six years.

St. Paul, Minnesota.—August 23 and 24.—Slight frosts, with harm to vegetation.

Manchester, Iowa.—August 25.—Thermometer 35° at sunrise; a little frost.